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Office of The Ombudsman, Hong Kong



主動調查報告
Direct Investigation Report

政府對新界豁免管制屋宇欠妥排污設施的執管
Government's Enforcement against Defective Sewage Works of New Territories Exempted Houses

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Executive Summary
Direct Investigation Report

Government's Enforcement against Defective Sewage Works of New Territories Exempted Houses

Introduction

In rural areas where no public sewers are available, septic tank systems are often installed in New Territories Exempted Houses ("NTEHs") for sewage treatment.

2. Defective sewage works of NTEHs, such as rupture or leakage of septic tanks, may cause serious environmental pollution and nuisance and even spread diseases. To address complaints about defective sewage works of NTEHs, the Environmental Protection Department ("EPD") enforces the Water Pollution Control Ordinance from the perspective of identifying any pollution caused to the waters of Hong Kong or sewage discharged into stormwater drains; the Food and Environmental Hygiene Department ("FEHD") investigates the existence of any nuisance specified in the Public Health and Municipal Services Ordinance; the Lands Department ("LandsD") takes lease enforcement action, where appropriate, after examining whether the defects are in breach of the sewage provisions in the land leases.

3. After scrutinising the work of EPD, FEHD and LandsD, this Office has the following comments and recommendations.

Our Findings

Inadequate Inter-departmental Collaboration in Complaint Handling

4. The construction of NTEHs is subject to the approval of LandsD. In the certificate of exemption in respect of drainage works issued by LandsD, standard health requirements are imposed on the sewage facilities of NTEHs. EPD and FEHD are the major enforcement authorities for environmental pollution or hygiene nuisance caused by defective sewage works.

5. EPD's information showed that between 2016 and 2022, more than 60% of the complaints received by it involved other departments, i.e. most were inter-departmental cases. Our investigation found that EPD, FEHD and LandsD have different views on the division of responsibilities. Case studies also revealed inadequacies on the part of the three departments in referring and following up on complaints. Despite the long existence of NTEHs, the three responsible departments still do not have a clear understanding of the actions that can be taken by and the enforcement constraints of one another in respect of sewage works. There are also no established guidelines among them on how to pursue this type of complaints under different scenarios. Without a

common understanding, each department refers and handles complaints merely based on its own knowledge of the other departments' duties. As a result, problems remain unresolved even after repeated shuffling among departments. The situation is indeed unsatisfactory.

6. This Office recommends that EPD, FEHD and LandsD set up an inter-departmental working group to provide a communication platform regarding their respective functions and constraints, with a view to complementing each other; the working group can also discuss solutions to complicated cases at an early stage to achieve synergy.

7. To enhance the effectiveness of enforcement, EPD, FEHD and LandsD should draw up operational guidelines for frontline staff specifying concrete follow-up and referral actions in typical scenarios of complaints, thereby rationalising the responsibilities and procedures for inter-departmental cases.

8. Meanwhile, EPD and FEHD focus on whether they can enforce the Water Pollution Control Ordinance and the Public Health and Municipal Services Ordinance respectively and seldom consider joint enforcement actions. For cases of sewage discharged into stormwater drains, apart from handling by EPD pursuant to the Water Pollution Control Ordinance, FEHD should be able to follow up from the perspective of environmental hygiene. This Office reckons that the two departments should explore room for enforcement cooperation, such as identifying the circumstances for taking joint actions to enhance the effectiveness.

No Mechanism for Information Exchange

9. Our investigation revealed no established mechanism for information exchange among EPD, FEHD and LandsD and this may compromise the enforcement efficiency. EPD and FEHD, as the enforcement authorities, have no mechanism for exchanging information and results (e.g. dye-tracing tests) obtained during investigation to facilitate appropriate actions by each other. Some cases also revealed that the departments were not fully aware of the types of information held by others.

10. We are pleased to note that after the launch of our investigation, EPD and FEHD have started discussion to strengthen cooperation on areas including information exchange. In our view, LandsD should also participate in the mechanism for information exchange. This is because as the approving authority for construction of NTEHs, LandsD knows the as-built condition of NTEHs and their sewage works, and such information may facilitate the investigation of EPD and FEHD. On the other hand, LandsD may take lease enforcement action in case of non-compliance, subject to the provision of findings by EPD and FEHD. This Office recommends that the three departments devise a proper mechanism for information exchange through the inter-departmental working group proposed above, so as to enhance the effectiveness and efficiency of complaint handling.

LandsD Should be More Proactive in Taking Lease Enforcement Action and Monitoring Case Progress

11. Our case studies revealed that LandsD merely focuses on referring complaints to EPD and FEHD without fully discharging its enforcement role. Moreover, LandsD has only recorded the total number of complaints received without any breakdown or further statistics, such as the number of inspections, the number of cases with action taken and the average number of processing days. Without data analysis, it is indeed difficult for LandsD to monitor the progress of complaint cases effectively. The situation is far from satisfactory. This Office urges LandsD to formulate a monitoring mechanism for complaint cases, conduct data analysis and proactively assist other departments where necessary; if a breach of land lease provisions is confirmed, LandsD should take lease enforcement action decisively.

Training of LandsD's Staff Should be Strengthened

12. LandsD is responsible for approving the construction of NTEHs including their sewage works. LandsD claimed that it is not a professional department specialising in sewage works. District Lands Offices' staff would inspect an NTEH during its construction, and conduct further inspection before issuing a certificate of compliance/letter of no objection to occupy, including checking by visual inspection whether sewage generated from the toilet and kitchen is discharged into the septic tank and reviewing items on the "Installation of Drainage Works" checklist.

13. Our case studies revealed various kinds of misconnected or faulty sewage works. In our view, it is particularly crucial to ensure the proper construction and connection of NTEH sewage works. Otherwise, these facilities would not only cause pollution easily, but also require more frequent maintenance and repairs afterwards, and involve a higher risk of damage. As a matter of fact, as the approving authority for the construction of NTEHs, LandsD has no expertise in sewage facilities. This inevitably casts doubt on its ability to make an accurate assessment of the compliance of NTEH sewage works during the approval process.

14. If complaints about defective sewage works are received after occupation of an NTEH, the investigation and enforcement work will be led by EPD and FEHD. The two departments should have certain experience and know-how in dealing with the pollution and environmental hygiene nuisance caused by faulty construction and misconnection of sewage works. This Office recommends that LandsD strengthen the training of District Lands Offices' staff through experience sharing by EPD and FEHD, such that they are well equipped to inspect sewage works upon the completion of NTEHs to prevent possible environmental hygiene problems at root.

Problems Caused by Improper Alteration of Sewage Pipes

15. LandsD explained that depending on site constraints or where applicable, prior to the granting of approval by the District Lands Office for the construction of NTEH

or issuing a certificate of exemption in respect of drainage works, applicants might need to submit drainage plans or drainage proposals as required by the Drainage Services Department ("DSD") and implement the drainage facilities to the satisfaction of DSD. If drainage plans or drainage proposals were submitted to DSD upon application for the construction of an NTEH, its owner would need to obtain prior permission from DSD for any alteration to sewage pipes after occupation; otherwise it might constitute a breach of the relevant provisions under the certificate of exemption. If submission of drainage plans or drainage proposals is not required by DSD upon construction of an NTEH, then DLO would not normally ask the applicant to submit such plans for approval; after occupation, the owner would not need prior permission from LandsD or DSD for alteration to sewage pipes.

16. Our case studies revealed that pollution caused by misconnection or improper alteration of sewage pipes was not uncommon. In this light, we consider LandsD should step up publicity and education on the environmental hygiene problems caused by improper alteration of sewage pipes. On one hand, NTEH owners should be reminded to obtain prior permission from relevant departments, where applicable under the prevailing requirements, for any alteration of sewage pipes for monitoring by the departments; on the other hand, even where no prior permission from departments is required, owners should be advised to seek assistance from professionals to ensure proper alterations.

Need to Explore Measures Urging Owners to Fulfil Maintenance Responsibility

17. Sewage provisions are normally included in the land grant documents of NTEHs. LandsD asserted that according to prevailing requirements, NTEH owners are responsible for proper treatment and disposal of sewage, as well as periodic inspection of sewage works. However, under the prevailing regulatory regime, no substantive measures are in place to ensure NTEH owners' fulfilment of their responsibility for proper sewage treatment and maintenance of sewage works.

18. LandsD stressed that EPD and FEHD take the lead in enforcement against pollution and environmental hygiene nuisance caused by defective sewage works of NTEHs. Nevertheless, EPD and FEHD each have constraints in enforcement. Given that most NTEHs had sewage works installed underground, any defect or disrepair might remain undetected until problems emerge and by then a considerable level of environmental pollution or nuisance might have already been caused. After all, enforcement is only a remedial response. It is indeed more crucial to take preventive measures.

19. This Office urges LandsD to explore formulating concrete measures to ensure NTEH owners know how to effectively fulfil their responsibility for proper sewage treatment and maintenance of sewage works in order to comply with the requirements of the land lease and the certificate of exemption.

Publicity and Public Education on Correct Use and Maintenance of Septic Tanks Should be Stepped up

20. NTEH owners have undeniable responsibility for proper maintenance of their sewage works. Information on the correct use and maintenance of septic tanks is mainly provided in the Guidance Notes on Discharges from Village Houses issued by EPD. The document is rather technical and difficult for laymen to grasp the essential points.

21. Following the launch of our direct investigation, EPD initiated a publicity campaign in late 2022 targeting villages not yet connected to public sewerage systems. In particular, EPD has created a new webpage and produced publicity materials with a QR code linking to the webpage, listing the points to note when using septic tank systems and details of desludging contractors.

22. This Office recommends that EPD further utilise electronic means and social media, produce promotional videos, etc. to raise NTEH owners' awareness of the importance of the correct use and proper maintenance of septic tanks and related information.

Application of Technology

23. EPD and FEHD often use the traditional method of dye-tracing test to track the pollution source but the test has certain limitations. We note that EPD has introduced new technology as an additional investigative tool. Its use of ground penetrating radar, coupled with augmented reality technology, for locating the source of water seepage not only reduces the inconvenience to households caused by making entry of their premises to apply dyes, but also produces strong evidence to convince NTEH owners to carry out proper repairs. EPD's active use of innovative technology is commendable. As the new technology is still in an initial stage of application, we opine that EPD may consider its more extensive use in due course for more effective detection of the seepage source, with a view to enhancing the effectiveness of complaint handling and investigation.

Recommendations

24. The Ombudsman has made the following recommendations to EPD, FEHD and LandsD:

EPD, FEHD and LandsD

(1) set up an inter-departmental working group to provide a communication platform regarding their respective functions and constraints, with a view to complementing one another and discussing solutions to complicated cases at an early stage to achieve synergy;

(2) draw up operational guidelines for frontline staff specifying concrete follow-up and referral actions in typical scenarios of complaints, thereby rationalising the responsibilities and procedures for inter-departmental cases;

(3) devise a proper mechanism for information exchange so as to enhance the effectiveness and efficiency of complaint handling;

EPD and FEHD

(4) for cases of sewage discharged into stormwater drains, explore room for enforcement cooperation, such as identifying the circumstances for taking joint actions to enhance the effectiveness;

LandsD

(5) formulate a monitoring mechanism for complaint cases, conduct data analysis and proactively assist other departments where necessary; if a breach of land lease provisions is confirmed, take lease enforcement action decisively;

(6) strengthen the training of District Lands Offices' staff through experience sharing by EPD and FEHD, such that they are well equipped to inspect sewage works upon the completion of NTEHs to prevent possible environmental hygiene problems at root;

(7) step up publicity and education on the environmental hygiene problems caused by improper alteration of sewage pipes. On one hand, NTEH owners should be reminded to obtain prior permission from relevant departments, where applicable under the prevailing requirements, for any alteration of sewage pipes for monitoring by the departments; on the other hand, even where no prior permission from departments is required, owners should be advised to seek assistance from professionals to ensure proper alterations;

(8) explore formulating concrete measures to ensure NTEH owners know how to effectively fulfil their responsibility for proper sewage treatment and maintenance of sewage works in order to comply with the requirements of the land lease and the certificate of exemption;

EPD

(9) further utilise electronic means and social media, produce promotional videos, etc. to raise NTEH owners' awareness of the importance of the correct use and proper maintenance of septic tanks and related information; and

(10) consider more extensive use of new technology in due course for more effective detection of the seepage source, with a view to enhancing the effectiveness of complaint handling and investigation.

Office of The Ombudsman
August 2023

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1

INTRODUCTION

BACKGROUND

1.1 New Territories Exempted Houses ("NTEHs") built in accordance with the Buildings Ordinance (Application to the New Territories) Ordinance are generally exempted from certain provisions of the Buildings Ordinance. Certificates of exemption, in respect of drainage works among other items, must be obtained from the Director of Lands before NTEHs are built. The certificate of exemption in respect of drainage works requires compliance with the Drainage and Health Requirements for Village Type Houses. In rural areas where no public sewers are available, applicants for construction of NTEHs should build sewage disposal systems including septic tanks and soakage pits according to the Drainage and Health Requirements for Village Type Houses.

1.2 Currently, the Environmental Protection Department ("EPD"), the Food and Environmental Hygiene Department ("FEHD") and the Lands Department ("LandsD") handle complaints about defective sewage works of NTEHs in accordance with the Water Pollution Control Ordinance, the Public Health and Municipal Services Ordinance and land lease provisions respectively. This Office has received from time to time complaints about ineffective enforcement by the departments concerned, where problems could only be resolved upon voluntary rectification by the NTEH owners.

1.3 Against this background, The Ombudsman launched on 12 May 2022 this direct investigation pursuant to section 7(1)(a)(ii) of The Ombudsman Ordinance against EPD, FEHD and LandsD to examine the Government's enforcement against defective sewage works of NTEHs, with a view to recommending improvement measures where necessary.

SCOPE OF INVESTIGATION

1.4 The scope of this direct investigation covers:

- whether the existing enforcement by EPD, FEHD and LandsD is effective with sufficient deterrence against non-compliance;

- whether adequate and effective measures are in place to ensure proper maintenance of sewage works by NTEH owners;

- whether inter-departmental collaboration is effective in handling relevant complaints; and

- any areas for improvement or reinforcement.

PROCESS OF INVESTIGATION

1.5 In this direct investigation, this Office has:

- examined information provided by EPD, FEHD, LandsD, the Drainage Services Department ("DSD") and 1823, including their case files, enforcement data and operational data;

- conducted site visits with EPD and FEHD;

- invited public views[1] and examined the information provided by members of the public; and

- studied relevant complaint cases and media reports.

1.6 On 13 June 2023, we issued a draft investigation report to EPD, FEHD, LandsD, DSD and 1823 for comments. Upon considering and incorporating their comments as appropriate, we completed this final report on 14 August 2023.

1 We received a total of three submissions of public views during this direct investigation.

2

SEWAGE WORKS OF NTEHS

2.1 NTEHs generally refer to village houses in the New Territories designed and built in compliance with the exemption criteria in respect of height, roofed-over area, etc., stipulated in the Buildings Ordinance (Application to the New Territories) Ordinance, and thereby qualifying for exemption from certain provisions of the Buildings Ordinance. The Director of Lands is empowered by the Buildings Ordinance (Application to the New Territories) Ordinance to issue certificates of exemption for NTEHs, including a certificate of exemption in respect of drainage works.

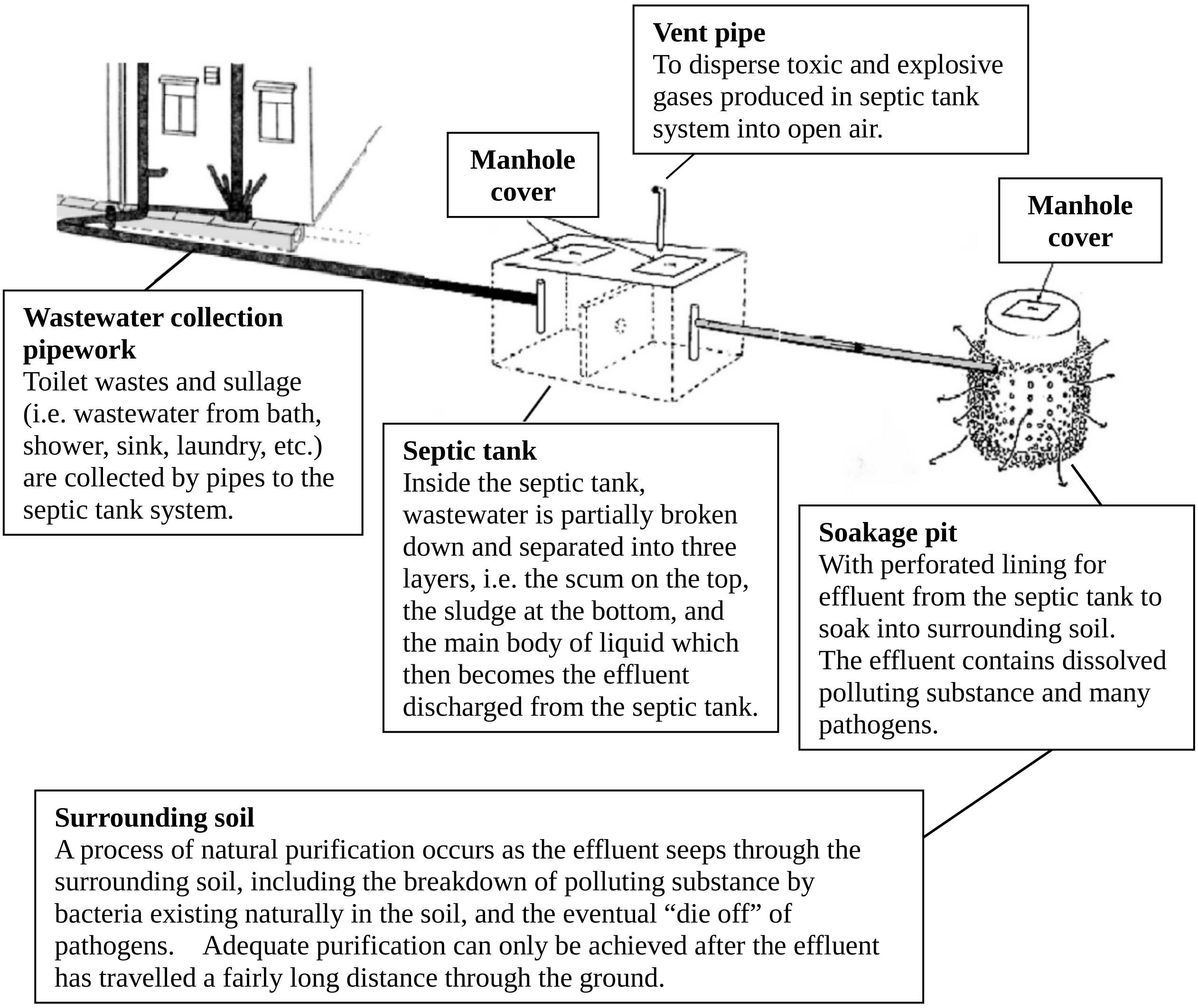
2.2 LandsD imposes in the certificate of exemption in respect of drainage works the standard health requirements stipulated by LandsD and/or EPD on the construction of NTEH sewage facilities.

USING SEPTIC TANKS FOR SEWAGE TREATMENT

2.3 In rural areas where no public sewers are available, septic tank systems are often installed in NTEHs for sewage treatment.

2.4 According to the Guidance Notes on Discharges from Village Houses issued by EPD, a septic tank system can only perform well if properly sited, designed, constructed, used and repaired where necessary and desludged frequently. The system consists of a septic tank, a soakage pit or some soakaway trenches. After passing through the septic tank and soakaway system, effluent eventually seeps into surrounding soil for natural purification. Stormwater drains and surface channels should not be connected to the septic tank system.

Figure 1: Septic tank and soakaway system
(Image courtesy of EPD)



2.5 The septic tank should be large enough to hold at least the volume of wastewater collected in one day; the soakaway system and surrounding soil should also be able to soak away the same volume in time. Polluting substance can only be removed from the wastewater after travelling a long distance in the soil. Hence, the septic tank system should not be located too near to any beach, stream, well, etc., or even retaining wall (where wastewater might seep out from the face of the wall) to avoid causing pollution.

2.6 EPD pointed out that with regular maintenance and repairs, septic tank and soakaway systems remain an effective solution for disposal of sewage in rural areas in many countries and regions. However, overflow from septic tanks or soakage pits, or direct discharge without treatment by soakaway systems, can cause pollution to the receiving water bodies.

APPROVAL OF NTEH SEWAGE WORKS

2.7 According to LandsD's records, in the early 1970s, upon permission given to build NTEHs or commence construction works, the District Offices in the New Territories would inform the Medical and Health Department for the latter's Health Inspectors to provide guidance on health requirements and recommendations on NTEH sanitary facilities (including the requirements for construction of septic tank and soakage pit) and monitor the works in progress, so as to ensure compliance with the health requirements. If environmental hygiene nuisance was caused by NTEH sanitary facilities, enforcement would be taken by Health Inspectors under relevant legislation.

2.8 In the early 1980s, LandsD took over the duties of monitoring the compliance with the health requirements during the construction of NTEHs and inspecting the sewage works upon completion. After completion of NTEHs, enforcement against environmental nuisance caused by defective sewage works was taken by the New Territories Services Department under the then Public Health and Urban Services Ordinance. Subsequently, with the Buildings Ordinance (Application to the New Territories) Ordinance coming into effect in 1987, the health requirements of NTEH (currently the Drainage and Health Requirements for Village Type Houses, see **para. 2.17**) continued to be adopted and attached to the certificate of exemption in respect of drainage works. Enforcement against environmental nuisance caused by defective sewage works of NTEHs was taken by the Regional Services Department under the then Public Health and Urban Services Ordinance. In 2002, given the rapidly increasing workload, the more complex nature and types of duties performed by the District Environmental Hygiene Offices, the prioritisation of competing tasks, and the small number of complaints about defective sewage works of NTEHs requiring its enforcement, FEHD decided to cease regular inspections and switch to a complaint-oriented approach for handling environmental nuisance associated with septic tank systems.

2.9 Currently, applicants for construction or redevelopment of NTEHs are required to submit to the District Lands Offices ("DLOs") a completed application form together with supporting documents, including a survey plan showing the proposed NTEH with the location of the septic tank and soakaway system. After approving the application, DLO would enter into a land grant (including private treaty, building licence, etc.) with the applicant. Land grant provisions generally require the grantee/licensee to bear the cost of constructing suitable drainage works for the proper treatment and disposal of sewage/wastewater generated by the NTEH to the satisfaction of the District Lands Officer; and/or not to permit sewage to flow onto any adjoining land or allow any decaying, noisome, noxious, excrementitious or other refuse matter to be deposited on any portion of the lot; and to see that all such matter is treated in such manner as FEHD [2] shall approve or require.

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[2] In response to our draft investigation report, FEHD said that desludging of septic tanks needs not to be carried out as approved or required by FEHD. Since FEHD's understanding is at odds with existing land lease provisions, this Office has recommended FEHD clarify the issue with LandsD separately.

2.10 The grantee/licensee who plans to build the NTEH pursuant to the Buildings Ordinance (Application to the New Territories) Ordinance has to apply to DLO for certificates of exemption in respect of building works, site formation works and drainage works. No building, site formation and drainage works shall commence on site unless the certificates of exemption have been obtained.

2.11 LandsD claimed that since it is not a professional department specialising in sewage works, the grantee/licensee is required, when applying for certificates of exemption, to sign and confirm that he had employed a building contractor to construct the NTEH, and a T2 competent person [3] to supervise the construction of the whole building (including site formation and drainage works). Depending on site constraints or where applicable, prior to the issue of a certificate of exemption in respect of drainage works, the grantee/licensee might be required by DSD to submit drainage plans or drainage proposals to the satisfaction of DSD. If drainage plans or drainage proposals have been submitted to DSD, NTEH owners have to inform DSD of any subsequent alteration.

2.12 If certificates of exemption are issued, the grantee/licensee has to undertake to comply with any conditions attached to or forming part of the certificates of exemption. Documents attached to the certificate of exemption in respect of drainage works include the Drainage and Health Requirements for Village Type Houses (see **para. 2.17**) and/or EPD's 1993 Practice Note (see **para. 2.21**), which set out the requirements and reference drawings for building septic tank and soakaway systems. The professionals employed by the grantee/licensee are responsible for supervising the construction of sewage works in compliance with these documents.

2.13 An NTEH in breach of any conditions under the certificates of exemption will no longer qualify for exemption. The grantee/licensee will have to submit the relevant building plans (including drainage plans) to the Building Authority (i.e. the Director of Buildings) for approval under the Buildings Ordinance.

2.14 After the land grant or building licence is issued, the staff of DLOs will inspect the NTEH under construction, including the septic tank and soakaway system on site. DLOs will notify the grantee/licensee to promptly rectify any irregularities detected during the construction stage.

2.15 In addition, before a certificate of compliance/letter of no objection to occupy is issued to the grantee/licensee, DLOs will check a range of building items listed on the "Standard Report on Completed NTEH", including the drainage items on the "Installation of Drainage Works" checklist (see **Appendix I**), to ensure compliance of the newly built NTEH. Staff will check whether the pipes used for discharge of sewage and wastewater are properly connected to the septic tank by flushing the system to

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[3] A T2 competent person means a person who possesses a higher diploma or higher certificate in civil/structural engineering, building technology, building surveying, architectural studies or similar fields awarded by universities funded by the University Grants Committee, or the Institutes of Vocational Education or the previous Technical Institutes operated under Technical Colleges approved and/or recognised by the Vocational Training Council, and with a total relevant working experience of not less than 3 years.

observe if the discharge from toilet and kitchen flows into the septic tank in a timely manner. They will also check the manholes and vent pipes connecting to the house by visual inspection and complete and sign the checklist according to internal guidelines. Upon detecting any non-compliance of the septic tank and soakaway system with the Drainage and Health Requirements for Village Type Houses and/or EPD's 1993 Practice Note, DLOs will notify the parties concerned to rectify the irregularities. As it is the responsibility of the grantee/licensee and his appointed professionals to ensure that the sewage works are built in compliance with the requirements, DLOs generally will not invite other departments for joint inspection of newly built NTEHs.

2.16 LandsD has no records of the number of newly built NTEHs with the installation of septic tanks. It also said that since the design and construction of NTEH sewage works are advised and confirmed by professionals as compliant, DLOs generally only require NTEH applicants to submit survey plans showing the location of the septic tank and soakaway system. DLOs generally will not require applicants to submit internal drainage designs and layouts, unless the submission of drainage plans or drainage proposals is required by DSD.

REQUIREMENTS FOR NTEH SEWAGE WORKS

Drainage and Health Requirements for Village Type Houses

2.17 The certificate of exemption in respect of drainage works stipulates that NTEH drainage works should comply with the Drainage and Health Requirements for Village Type Houses (see **Appendix II**). A septic tank must be installed unless the NTEH is located in an area with public sewers.

2.18 The Drainage and Health Requirements for Village Type Houses stipulate the standard of the design, dimensions and materials of septic tank and soakage pit system, including that the septic tank and soakage pit should situate not less than 30 m from any spring, stream, well or beach; the dimensions of the septic tank should be 0.8 m (internal width) x 2.4 m (internal length) x 1.2 m (tank water level, i.e. distance between the floor and the lowest point of the horizontal section of the outlet dip-pipe); the distance between the tank water level and the roof should not be less than 300 mm, etc.

2.19 Under the Drainage and Health Requirements for Village Type Houses, the house owner/occupier is required to maintain the septic tank in proper working order at all times and carry out periodic desludging where necessary. If any wastewater is found to have been discharged into communal surface drains, streams, etc., enforcement will be taken by EPD under the Water Pollution Control Ordinance. LandsD asserted that according to the Drainage and Health Requirements for Village Type Houses, NTEH owners are responsible for proper treatment and disposal of wastewater, as well as periodic inspection of sewage works.

2.20 LandsD explained that the Drainage and Health Requirements for Village Type Houses were formerly the health requirements provided by the Medical and Health Department regarding NTEH sanitary facilities, including the requirements for building septic tank and soakage pit (see **paras. 2.7 and 2.8**). Amendments were made subsequently after consultation with relevant departments, including EPD. LandsD made a number of amendments based on EPD's comments. For example, after consulting EPD in 2007 and based on its comments, LandsD explicitly stipulated that enforcement may be taken by EPD under the Water Pollution Control Ordinance, and that the septic tank should be built in accordance with EPD's 1993 Practice Note in specific circumstances (see **para. 2.21**).

1993 Practice Note

2.21 In 1993, EPD issued a practice note ("1993 Practice Note") for reference by Authorised Persons to facilitate their preparation of drainage plans submitted under the Buildings Ordinance. The 1993 Practice Note sets forth various technical requirements for septic tank system, including the requirements of design dimensions, the minimum distances of the septic tank system from various sensitive water bodies and the conduct of percolation tests. For example, septic tank systems should be located at least 100 m from the boundaries of beaches gazetted under the Public Health and Municipal Services Ordinance, 50 m from wells and 0.6 m from underground water level. Septic tank systems designed and constructed according to the 1993 Practice Note, coupled with proper maintenance and repairs, would achieve the intended function of sewage treatment and prevent sewage discharge from polluting the environment.

2.22 Upon completion of a septic tank system in accordance with EPD's 1993 Practice Note, the grantee/licensee applying to LandsD for the certificate of compliance or letter of no objection to occupy is required to submit a construction completion report for sewage works signed by his appointed professionals, certifying that the design and construction of the septic tank and soakaway system fully comply with the technical requirements.

2.23 The 1993 Practice Note contains some technical requirements more stringent than the Drainage and Health Requirements for Village Type Houses. Generally, DLOs only require newly built or redeveloped NTEHs to comply with the Drainage and Health Requirements for Village Type Houses. Nevertheless, in a bid to strengthen control of NTEH sewage works in environmentally sensitive areas, LandsD and EPD introduced a new requirement in December 2014, whereby applicants for construction or redevelopment of NTEHs located within the country park enclaves in three environmentally sensitive areas (namely Hoi Ha and Pak Lap in Sai Kung, and So Lo Pun in North District) should design and construct septic tank systems in accordance with EPD's 1993 Practice Note, and submit percolation test results certified by building professionals at the application stage.

Audit Recommendations

2.24 In Report No. 67 of the Director of Audit published in 2016, the Audit Commission pointed out that some of the NTEH sewage requirements under the certificate of exemption issued by LandsD were not on par with EPD's 1993 Practice Note, including the minimum horizontal distance of septic tank systems from beaches and wells, the minimum vertical distance from underground water level, and when percolation tests should be conducted. Audit Commission recommended that the two departments review and align their requirements for septic tank systems as far as practicable.

2.25 In response to the Audit recommendations, EPD and LandsD established a task force in December 2016 to review the requirements for septic tank systems under the certificate of exemption and reached a consensus. Given the practical limitations, LandsD decided to require more NTEH applicants to construct septic tank systems in accordance with EPD's 1993 Practice Note, namely applicants whose proposed sites are located within existing "V" Zones (village type development) between 15 m and 30 m from stream courses and wells not for drinking or domestic purposes; outside existing "V" Zones requiring planning permission; or in new/newly enlarged "V" Zones. LandsD's internal operation guidelines were updated subsequently in December 2018 and August 2020.

Guidance Notes on Discharges from Village Houses

2.26 EPD issued the Guidance Notes on Discharges from Village Houses with tips for operating the septic tank and soakaway system to facilitate its proper use and maintenance by householders.

2.27 According to the Guidance Notes, householders are advised to inspect the septic tank system and measure the depth of sludge at least once every six months. More frequent inspections and desludging may be necessary for heavily used septic tanks. A record should be kept for all inspections, desludging and repairs of the septic tank system.

2.28 It is also mentioned in the Guidance Notes that EPD will inspect septic tanks and associated drainage systems to ensure that they are properly used, maintained and desludged. Where irregularities are identified, EPD will issue a warning letter requiring the responsible householders to improve the septic tanks and associated drainage systems, including installation of new wastewater treatment facilities where necessary. Any householders failing to make the necessary improvements may be prosecuted by EPD.

LICENSING OF SEPTIC TANK SYSTEMS

2.29 EPD explained that under the Water Pollution Control Ordinance, licensing

is not mandatory for sewage works on any premises, including the septic tank system and associated soakaway system of NTEHs. However, persons responsible for the premises (including village householders) may apply to EPD for a licence under section 14 of the Water Pollution Control Ordinance in respect of the sewage works on their premises.

2.30 The licensing of septic tank systems originated in 1990 when the Government declared to include the Deep Bay and Mirs Bay Water Control Zones (covering North District and Yuen Long Districts) under the regulatory scope of the Water Pollution Control Ordinance, bringing all discharges in the area within the licensing system. According to EPD, at that time the licensing of sewage discharges and septic tank systems of NTEHs was vigorously opposed by village representatives, who argued that the licensing system under the Ordinance should not be applicable to domestic discharges from NTEHs. In 1992, the then Planning, Environment and Lands Branch, after seeking legal advice, clearly informed the Heung Yee Kuk New Territories and New Territories village representatives that licensing of sewage discharges was not mandatory under the Water Pollution Control Ordinance. Although owners of septic tank systems might choose not to obtain a licence for their facilities, they would have no defence and have to bear the risk of prosecution if any waste or polluting matter was discharged by their facilities into downstream water bodies.

2.31 EPD stipulates in the licence granted for NTEH septic tank system the standard conditions for the discharge, operation and maintenance of wastewater treatment facilities, handling and disposal of sludge as well as records. The conditions include: domestic sewage shall be discharged into the septic tank system; the licensee shall desludge the septic tank regularly, clear clogged soakage pit immediately, repair damage to the wastewater treatment facilities immediately, take all practical measures to ensure proper functioning of the wastewater treatment facilities, and shall not cause any discharge of polluting matter to the environment; and the licensee shall keep the records of all desludging and disposal operations on the premises. The licensing system does not regulate the design and construction of NTEH septic tank systems.

2.32 The licence granted for NTEH septic tank system is effective perpetually, until the domestic sewage from the premises has been connected to communal sewers when they are provided in the vicinity, or the premises has been demolished. Since September 2008, EPD has not received any licensing application for NTEH septic tank system. As of February 2023, there were 1,912 licensed septic tanks across the territory. According to EPD's records, no licences for NTEHs have ever been revoked due to a breach of the licensing conditions by licensees.

2.33 EPD explained that the effluent from septic tank systems would seep into the ground for natural purification through surrounding soil, and therefore unlike other wastewater sources, no discharge permit can be issued under the Water Pollution Control Ordinance to prescribe the points or limits of discharge to facilitate enforcement. Moreover, licensing is not the primary means for regulating domestic sewage from NTEHs. With proper design, operation and maintenance, septic tank systems can

effectively control pollution. EPD has no plans to mandate all NTEH septic tank systems to obtain a licence.

VILLAGE SEWERAGE PROGRAMME

2.34 Since the 1990s, EPD and DSD have been actively taking forward public works to implement the Village Sewerage Programme throughout the territory, with the aim of improving the rural living environment and enhancing the water quality of nearby rivers and coastal areas.

2.35 Currently, there are approximately 1,000 villages in Hong Kong. As at the end of 2022, the Government had completed public sewerage systems for 263 villages, covering around 29,000 NTEHs with a population of 199,000. Additionally, around 318 villages had been included in the Village Sewerage Programme (with works in progress in 62 villages), covering around 51,000 NTEHs with a population of 323,000. The remaining 460 villages had yet to be included in the Village Sewerage Programme. The number of villages covered by the Programme is tabulated below.

Table 1: Villages covered by Village Sewerage Programme (As at December 2022)

District	No. of villages with sewerage system completed	No. of villages included in public sewerage projects (Villages with works in progress in brackets)	No. of villages not yet included in public sewerage projects	Total no. of villages
Sha Tin	44	11 (2)	19	74
Tai Po	78	40 (6)	36	154
North	44	54 (6)	94	192
Sai Kung	25	45 (18)	67	137
Tsuen Wan	12	10 (2)	20	42
Kwai Tsing	5	2 (1)	8	15
Islands	29	63 (18)	60	152
Yuen Long	16	59 (1)	137	212
Tuen Mun	10	29 (4)	6	45
Others	0	5 (4)	17	22
Total	263	318 (62)	464	1,045

2.36 EPD stated that some villages have yet to be included in the Village Sewerage Programme primarily because their locations are far away from existing trunk sewers, the de jure population in the villages is small, or local residents did not accept the Government's proposed arrangements for public sewers. In future planning, the Government will consider such factors as the level of improvement to the environment by the Programme, density of village population, preference of residents, technical feasibility, cost effectiveness, regional planning and environmental geography to prioritise the expansion of Village Sewerage Programme and gradually extend its network, thereby reducing complaints arising from defective sewage works of NTEHs.

2.37 Pursuant to the Water Pollution Control (Sewerage) Regulations, where an NTEH is not connected to communal sewer available in the vicinity, EPD may serve a statutory notice requiring its owner to complete construction works to convey sewage to the communal sewer within the specified time. EPD will consider prosecuting NTEH owners who fail to comply with the statutory notice. Between 2017 and 2021, EPD brought three prosecutions against non-compliance with the notice. All charges were subsequently dropped due to the owner's prolonged absence from Hong Kong, or EPD's acceptance of the owner's explanation of delay due to the COVID-19 epidemic.

3

REGULATORY JURISDICTION OF DEPARTMENTS

3.1 The Government adopts a complaint-oriented approach to address the pollution and environmental hygiene nuisance caused by defective sewage works of NTEHs. The regulatory jurisdiction of EPD, FEHD and LandsD is as follows.

EPD

3.2 EPD protects water bodies in Hong Kong primarily by enforcing the Water Pollution Control Ordinance. The Ordinance prohibits illegal discharge of wastewater into local waters with a focus on the control of discharge from industrial and commercial pollution sources and wastewater treatment facilities. Pursuant to the Ordinance, no person shall discharge any waste into the waters of Hong Kong in a water control zone, or discharge any domestic sewage into a communal stormwater drain. Any persons (including property owners or occupiers) who discharge waste or polluting matter into the waters of Hong Kong in a water control zone commit an offence and are liable to imprisonment for six months and a fine of $200,000 ($400,000 for second or subsequent conviction), with a daily fine of $10,000 for continuing the offence.

3.3 Overall, EPD considers industrial and commercial premises to be the major sources of large-scale pollution, with various types of discharge generally causing a higher risk of environmental pollution and more severe consequences than NTEH sewage. In view of the available manpower resources, EPD prioritises the inspection or control of wastewater from industrial and commercial premises. Despite the large number of NTEHs, most are located in remote rural areas and scattered sites with relatively low levels of discharge. Septic tank systems, if properly used and regularly maintained, pose a relatively minor impact on the environment. Given the manpower constraints, EPD regards inspection or control of NTEH septic tank systems as secondary. A complaint-oriented approach is adopted to address pollution and nuisance caused by septic tank systems.

3.4 Upon receiving complaints about defective sewage works of NTEHs, EPD will initiate investigation in accordance with its established procedures and guidelines.

EPD staff will conduct site inspection, check the relevant septic tank systems and stormwater drains, and request the householders to present the latest records of desludging and maintenance to assist investigation. In case of any signs of abnormal leakage, EPD staff will trace its source and conduct dye-tracing test for confirmation if feasible. Where defects of sewage works are ascertained, warning letters will be issued to the responsible householders, requesting them to inspect and properly repair the facilities with reference to the Guidance Notes on Discharges from Village Houses. In addition to providing the complainants with progress updates, EPD also conducts follow-up inspection as necessary to ensure improvement of the problem.

3.5 If the responsible householders (owners or occupiers) fail to take remedial measures, resulting in sewage discharged into nearby rivers, water bodies or communal stormwater drains and thus polluting Hong Kong waters or communal stormwater drains, EPD will collect sewage samples for testing and institute prosecution under the Water Pollution Control Ordinance. EPD pointed out that under the current legal framework, the standard of proof for prosecution is very stringent. During enforcement, EPD staff must witness the discharge of sewage from an NTEH and collect a sufficient sample (approximately 3 litres of wastewater) on the spot, and confirm the source of discharge and that the final point is Hong Kong waters or communal stormwater drains.

3.6 If a complaint is found to be under the purview of other departments, EPD will refer the case according to the jurisdiction of relevant departments. For example, LandsD may enforce the sewage provisions in land grant to follow up on the maintenance of septic tank systems and request the householder to rectify the problem; FEHD may follow up on the environmental hygiene nuisance caused by septic tank operation; DSD may approve the connection of drainage pipes to public sewers. Based on the investigation results, EPD will refer the case for further action by the responsible departments in parallel.

Publicity by EPD

3.7 To promote the prevention of water pollution by proper use and regular inspection of septic tank systems in villages without public sewers, EPD launched a publicity campaign in late 2022. With the support of the Heung Yee Kuk New Territories, EPD created a new webpage and a set of magnetic stickers as publicity materials for distribution to villagers in unsewered rural areas across Hong Kong. The publicity materials feature a QR code linking to EPD's new webpage [4], which lists the points to note when using septic tank systems and details of desludging contractors.

4 Hyperlink: https://www.epd.gov.hk/epd/sites/default/files/epd/english/environmentinhk/water/guide_ref/files/tips_septic_tank.pdf

Figure 2: Magnetic stickers used by EPD for publicity
(Image courtesy of EPD)



3.8 In addition, EPD has written to the relevant village representatives, inviting them to remind householders about the correct use and regular inspection of septic tank systems, frequent desludging, and prompt repairing where necessary, so as to ensure the effective functioning of septic tank systems and prevent environmental pollution and hygiene nuisance. In tandem with distribution of publicity materials, EPD has also explained the best practice of operating and maintaining septic tank systems. EPD has gradually distributed the publicity materials since January 2023. As of late June 2023, around 27,000 sets of publicity materials had been distributed in over 300 villages, accounting for more than 70% of the overall target of the publicity campaign.

FEHD

3.9 When handling complaints about environmental hygiene nuisance caused by defective sewage works of NTEHs, FEHD focuses on investigating whether there is any matter in such a state as to be a nuisance or injurious or dangerous to health, and follows up accordingly.

3.10 Pursuant to section 12 of the Public Health and Municipal Services Ordinance, any premises or matters specified in the Ordinance (such as drains, soil pipes, and the like) are in such a state as to be a nuisance or injurious or dangerous to health may be dealt with summarily by FEHD staff under section 127. Upon receiving relevant complaints, FEHD staff will conduct site investigation. If a nuisance specified in the Ordinance is found, FEHD may serve a Nuisance Notice under section 127 requiring the relevant person(s) to abate the nuisance within the specified period. Any

person who fails to comply with the Nuisance Notice is liable to prosecution by FEHD and a maximum fine of $10,000, with a daily fine of $200 for continuing the nuisance.

3.11 If the nuisance persists after conviction of the relevant person(s) for non-compliance with the Nuisance Notice, FEHD may apply to the court for a Nuisance Order requiring compliance within the specified period. Any person who fails to comply with the Nuisance Order is liable to prosecution by FEHD and a maximum fine of $25,000, with a daily fine of $450 for continuing the nuisance.

3.12 Whether FEHD can issue a Nuisance Notice under the Public Health and Municipal Services Ordinance depends on the actual circumstances. As a case in point, a complainant reported sewage overflow and suspected a blockage of sewers, but the overflow occurred intermittently. If no nuisance was found during site investigation, FEHD staff had to inspect again to ascertain the existence of nuisance. In another case, a complainant found water dripping from the exterior wall of a building and suspected there was defective sewage works. FEHD's investigation revealed that the water dripping was caused by broken fresh water pipes. In such circumstances, the case would referred to the Water Supplies Department ("WSD") for further action.

3.13 When following up on complaints about environmental hygiene nuisance caused by defective sewage works of NTEHs, FEHD needs to first establish the existence of nuisance, and then conduct further investigation into its source and cause. Thereafter, a Nuisance Notice would be served on the relevant person(s), specifying the necessary remedies and repair items to abate the nuisance, such as clearing the blockage of manholes within the specified period. During investigation, FEHD staff mainly check any defective sewers by visual inspection. If there are reasonable grounds to suspect certain pipework of causing the nuisance, dye-tracing test will be conducted for confirmation. However, where the source of nuisance involves underground septic tank systems or multiple NTEHs, it is very difficult to trace the source and dye-tracing test is not effective.

3.14 FEHD explained that due to the inadequate planning of NTEHs, unauthorised connection of pipework and illegal discharge of sewage are often involved. Some cases even involve the structural, design and connection problems of multiple buildings and their sewage works, in which FEHD staff have no expertise. As these situations may come under the purview of other departments such as LandsD and EPD, FEHD will refer the cases to the relevant departments. For example, cases where the sewage works of NTEHs are not connected to wastewater treatment facilities (including direct connection of sewers to stormwater drains) are referred to EPD, and cases involving effluent overflow caused by poor maintenance of septic tanks are referred to LandsD and EPD.

LANDsD

3.15 Generally, NTEH grants made by private treaty and building licence are

subject to land grant provisions requiring the grantee/licensee to bear the cost of constructing suitable drainage works for the proper treatment and disposal of sewage/ wastewater generated by the NTEH to the satisfaction of the District Lands Officer; and/or not to permit sewage to flow onto any adjoining land or allow any decaying, noisome, noxious, excrementitious or other refuse matter to be deposited on any portion of the lot; and to see that all such matter is treated and disposed of in such manner as FEHD [5] shall approve or require. There are no land lease provisions governing the location of underground pipework. LandsD said that existing control of NTEH sewage works mainly concerns the septic tank and soakaway systems, and prior permission from DLOs is required for altering the location of septic tank and soakaway systems.

3.16 LandsD pointed out that the land lease is a contract signed between the Government, as the landlord, and the landowner. As it is not legislation, no prosecution or charge can be instituted. When any breach of land lease is scrutinised, whether lease enforcement action can be taken depends on such factors as the content of lease provisions and severity of the breach. LandsD usually needs to seek legal advice.

3.17 LandsD said that NTEH sewage works have been monitored primarily by means of enforcement under the purview of EPD and FEHD. According to the Drainage and Health Requirements for Village Type Houses attached to the certificate of exemption in respect of drainage works, LandsD will refer complaints involving environmental hygiene nuisance caused by defective sewage works to EPD for enforcement under the Water Pollution Control Ordinance, and to FEHD as necessary.

3.18 LandsD added that upon receiving a complaint, DLOs will generally conduct site inspection before passing the findings to relevant departments such as FEHD and EPD for further action and enforcement. The professional departments, applying their professional judgement, will confirm the source of leakage and any environmental hygiene nuisance or pollution caused by defective sewage works. DLOs will also issue an advisory letter requiring NTEH owners to face up to the problem and fix the sewage works for prevention of environmental hygiene problems. After the source of leakage is confirmed by the professional departments and a breach of land lease provisions is established, DLOs will issue a warning letter requiring NTEH owners to rectify. If the problem is not rectified by the deadline, DLOs will register the warning letter in the Land Registry (commonly known as "imposing an encumbrance"). Given the need to confirm the source of leakage, scrutinise the content of lease provisions, assess the severity of the breach and seek legal advice before DLOs can establish a breach of land lease, the process of lease enforcement action generally takes time.

3.19 LandsD pointed out that since the NTEH concerned and sewage works have already been completed when a complaint referral is made to other departments, the latter usually identifies any defects or leaks by visual inspection and dye-tracing. Hence, when referring complaints to other departments, DLOs generally do not provide

[5] See note 2.

them with any drainage plans or drainage proposals previously submitted by the applicants. Yet, if the relevant departments request such information for investigation, DLOs will fully cooperate and provide the necessary information to facilitate the identification of the source of sewage leakage.

3.20 Furthermore, LandsD explained that the arrangements and content of land leases vary according to the era and location of the private lots, and sewage provisions are not always available. For example, in respect of old schedule lots granted under the Block Crown Leases in early 20^{th} century, the land leases in the early days did not contain provisions for construction of sewage works. In such cases, LandsD can hardly take lease enforcement action based on land lease provisions. Prevailing land grant documents have incorporated relevant provisions (see **para. 3.15**).

4

CURRENT SITUATION OF PROBLEM, COMPLAINT HANDLING AND ENFORCEMENT

ESTIMATED NUMBER OF SEPTIC TANK SYSTEMS

4.1 In 2016, EPD estimated that there were over 80,000 NTEH septic tank systems in Hong Kong. By the end of 2022, around 17,000 NTEHs had switched from septic tank systems to connections with public sewerage systems under the Village Sewerage Programme. In other words, tens of thousands of septic tanks are still in use.

WATER QUALITY IN RURAL AREAS

4.2 EPD has implemented water quality monitoring programmes to periodically monitor the water quality of Hong Kong's marine waters, main rivers and beaches, thereby assessing the overall condition of these water bodies, monitoring long-term changes in water quality, and providing data for water quality management and water pollution control. Under EPD's regular river water quality monitoring programme since 1986, one or more representative monitoring stations have been set up at the upstream and downstream sections of the main channels and tributaries of large rivers flowing through the New Territories or urban areas. A number of small rivers and streams in rural areas and on outlying islands are also monitored. Currently, the monitoring programme covers 30 watercourses with a total of 82 monitoring stations.

4.3 EPD has been using the Water Quality Index ("WQI") to indicate the general health of rivers. With various pollution control measures implemented by the Government over the years, the overall water quality in Hong Kong has gradually improved. In 2021, 49% of the river monitoring stations were graded [6] "Excellent",

[6] According to the Hong Kong River Water Quality report, the WQI is mainly related to the practical ability of a river to support aquatic life, using three key parameters, namely dissolved oxygen, 5-day biochemical oxygen demand and ammonia-nitrogen content, to measure its overall health and water quality, which are classified into five grades: "Excellent", "Good", "Fair", "Bad" and "Very Bad".

and 32% “Good”; only 9% were graded “Bad” or “Very Bad”.

4.4 As at the end of 2022, Yuen Long and North District had the largest number of rural villages not covered by the Village Sewerage Programme (see **Table 1** in **para. 2.35**). According to the Hong Kong River Water Quality report in 2021, the overall compliance rate of Water Quality Objectives was 84% for River Indus, the main river in North District, with the WQI of three monitoring stations along the river graded from “Good” to “Excellent”. River Beas, a tributary of River Indus, recorded an overall compliance rate at 71% in 2021, with the WQI of three monitoring stations along the river graded from “Fair” to “Good”.

4.5 Yuen Long Creek, a major river flowing through rural areas and the densely populated Yuen Long new town and old market, merges with Kam Tin River before entering the Deep Bay. In 2021, the overall compliance rate of Water Quality Objectives was 41% for Yuen Long Creek, with the WQI of two upstream monitoring stations graded “Bad” and “Fair”, and two downstream stations graded “Bad” and “Very Bad”. Kam Tin River recorded an overall Water Quality Objectives compliance rate at 38%, with the WQI of two monitoring stations graded “Bad” and “Very Bad”.

4.6 According to the Hong Kong River Water Quality reports in 2020 and 2021, an upstream monitoring station of Tuen Mun River was graded “Bad” for two consecutive years, mainly caused by discharges from unsewered rural areas.

4.7 In addition, according to the Hong Kong River Water Quality reports in 2020 and 2021, 26% and 27% of the monitoring stations recorded “High” or “Very High” levels of *Escherichia coli* [7] (i.e. over 10,000 counts per 100 ml). EPD explained that the monitoring stations with “Very High” levels of *Escherichia coli* were mostly located in the northwest New Territories, mainly caused by discharges from nearby livestock farms, surface runoff from unsewered rural areas, and misconnection of sewers in old districts.

4.8 The above information indicates that the water quality in some rural areas is still unsatisfactory. It cannot be ruled out that discharges from NTEHs not yet covered by the Village Sewerage Programme, especially if the sewage works of these houses are not properly maintained, have a negative impact on the water quality of nearby rivers.

COMPLAINTS ABOUT NTEH SEWAGE WORKS

Referrals by 1823 and Performance Pledges of Responsible Departments

4.9 Based on the information provided by complainants and the location and type of incidents, 1823 refers complaints to the relevant departments for handling according

7 As excreta from all warm-blooded animals (including humans, livestock, pets, birds, etc.) contain *Escherichia coli*, its measured level in a water body has been widely used as an indicator for assessing the presence and extent of faecal contamination.

to their scope of duties. The referral arrangements and performance pledges of each department are as follows.

Table 2: Criteria of complaint referrals and performance pledges of departments

Department	Scope of duties	Performance pledges
LandsD	Non-structural defects such as damage, leakage, blockage or misconnection of NTEH sewage works	Reply within 10 calendar days or issue an interim reply first. If a substantive reply is not available within 21 calendar days after case receipt, the complainant will be informed of the progress first.
FEHD	Environmental hygiene problems in public places (e.g. sewage gushing onto streets) caused by blockage of drainage pipes on the external walls of buildings or manholes	Issue an interim reply within 10 calendar days. If a substantive reply is not available within 30 calendar days after case receipt, the complainant will be informed of the progress first.
EPD	Illegal discharge of wastewater	Final reply within 30 calendar days
DSD	Blockage and damage of public sewers, overflow of sewage/ faecal matter	Flooding and sewer blockage: Site inspection and reply by midnight of same day or noon of next day Other complaints/enquiries: If a final reply is not available within 10 calendar days, interim reply or interim report will be issued first.

4.10 1823 said that it has not kept a breakdown of the complaints about defective sewage works of NTEHs. Besides, apart from 1823, members of the public can also lodge complaints with the relevant departments direct.

Complaints Received by Departments

4.11 The number of complaints received by EPD, FEHD and LandsD about defective sewage works of NTEHs between 2016 and 2022 is given below.

Table 3: Complaints about environmental nuisance or pollution caused by defective sewage works of NTEHs received by departments

Year	LandsD (see para. 4.12)	FEHD (No. of complaints involving other departments in brackets)	EPD (No. of complaints involving other departments in brackets)
2016	870	84 (4)	189 (118)
2017	1,020	102 (16)	241 (159)
2018	1,197	85 (20)	283 (177)
2019	1,026	92 (23)	254 (164)
2020	876	91 (25)	351 (231)
2021	832	117 (33)	406 (284)
2022	604	115 (46)	234 (178)
Total	6,425	686 (167)	1,958 (1,311)
Average	918	98 (24)	280 (187)

4.12 **Table 3** shows that between 2016 and 2022, EPD received a total of 1,958 complaints or an average of 280 per year, of which 187 (67%) also involved other departments. FEHD received a total of 686 complaints or an average of 98 per year, of which 24 (24%) also involved other departments. Between 2016 and 2022, LandsD received a total of 6,425 complaints, or an average of 918 per year, related to drainage facilities, but it has not kept any breakdown statistics. Therefore, in addition to septic tanks and soakage pits, LandsD's figures also include complaints about other drainage facilities, such as stormwater drains, roadside drains, water seeping through road cracks, and blockage of surface drain outlets.

Sewage Facilities Involved in Complaints

4.13 LandsD has not maintained a breakdown of complaints by type of sewage facilities (such as septic tank, manhole and pipework), nor has it kept such statistics as the number of inspections, cases with defective sewage works identified, cases with action taken, average number of processing days, etc. LandsD considered that the environmental hygiene nuisance and pollution caused by defective sewage works of NTEHs have all along been handled and regulated by EPD and FEHD. LandsD currently only records the total number of complaints and has no plans to maintain any breakdown statistics.

4.14 Between 2016 and 2022, cases involving pipework and septic tanks accounted for the majority of complaints received by EPD and FEHD (see **Table 4**).

Table 4: Sewage facilities involved in complaints received by FEHD and EPD

Year/Department		Septic tank	Manhole	Pipework	Others	Total
2016	**FEHD***	52	6	26	0	84
	EPD#	67	9	96	24	196
	Subtotal	119	15	122	24	280
2017	**FEHD**	59	13	30	0	102
	EPD	67	16	130	28	241
	Subtotal	126	29	160	28	343
2018	**FEHD**	50	7	29	3	89
	EPD	86	17	147	31	281
	Subtotal	136	24	176	34	370
2019	**FEHD**	53	10	30	0	93
	EPD	91	7	123	39	260
	Subtotal	144	17	153	39	353
2020	**FEHD**	49	11	34	2	96
	EPD	98	12	214	35	359
	Subtotal	147	23	248	37	455
2021	**FEHD**	68	14	42	3	127
	EPD	128	20	181	93	422
	Subtotal	196	34	223	96	549
2022	**FEHD**	57	13	45	6	121
	EPD	81	15	99	44	239
	Subtotal	138	28	144	50	360
Total	**FEHD**	388	74	236	14	712

Year/Department		Septic tank	Manhole	Pipework	Others	Total
	EPD	618	96	990	294	1,998
	Subtotal	1,006	170	1,226	308	2,710

* FEHD remarked that "others" include complaints about road cracks, stormwater drains and illegal discharges. As some cases involved more than one type of sewage facilities, the total number of cases in the above table for certain years is higher than that in Table 3.

\# EPD remarked that "pipework" complaints also involve drains in the vicinity of NTEHs, such as surface channels. Complaints of "others" involve: discharge from washing machines, leakage/dripping/discharge from unidentified sources, etc. As some cases involved more than one sewage problems or were found unrelated to NTEH sewage after investigation, the total number of cases in the above table for certain years is different from that in Table 3.

4.15 EPD pointed out that it had received more complaints about environmental problems related to NTEHs since the outbreak of COVID-19 in early 2020, but there was no significant increase in the number of cases requiring improvement to sewage works after investigation (see **para. 4.17**).

Follow-up Action by Departments

EPD

4.16 Between 2016 and 2022, the number of inspections carried out by EPD ranged from 2.25 to 3.01 per complaint each year. Relevant figures are given below.

Table 5: EPD's inspections in response to complaints

Year	No. of complaints	No. of inspections	Average no. of inspections
2016	189	542	2.87
2017	241	631	2.62
2018	283	852	3.01
2019	254	694	2.73
2020	351	790	2.25
2021	406	959	2.36
2022	234	702	3.00

4.17 Between 2016 and 2022, EPD found improvement to sewage works required and pollution of stormwater drains established in 326 and 201 cases respectively (see **Table 6**), or an average of 47 and 29 cases per year respectively. In cases with pollution of stormwater drains established, EPD said that some involved abnormal leakage of sewage and it was difficult to collect sewage samples; in some cases, the source of discharge could not be confirmed.

4.18 In cases requiring improvement to sewage works, EPD would issue an advisory or warning letter according to circumstances. Between 2016 and 2022, the advisory or warning letters issued by EPD ranged from 61 to 153 per year. Relevant statistics are given below.

Table 6: Complaints with improvement to sewage works required and pollution of stormwater drains established and EPD's follow-up action

Year	No. of complaints received	Cases with improvement to sewage works required	Cases with pollution of stormwater drains established	Advisory/ warning letters issued	Average processing time* (days)
2016	189	28	24	61	56
2017	241	49	36	93	29
2018	283	61	43	136	44
2019	254	51	29	73	38
2020	351	50	25	87	62
2021	406	54	30	153	31
2022	234	33	14	69	34
Total	1,958	326	201	672	--
Average	280	47	29	96	--

* Calculated from the opening of case file to the final follow-up inspection, covering the entire process of tracing the pollution source. Typically, the process includes site inspection, contacting NTEH owners/occupiers for dye-tracing, tracking the drainage network, searching property titles, liaising with village representatives for coordination, issuing warning letters as needed, contacting relevant departments for action in parallel, and providing information to assist in the investigation of other departments.

4.19 EPD pointed out that the majority of complaints only involved the overflow and abnormal leakage from septic tank systems to the ground surface near NTEHs or into the private pipework within the village, rather than direct discharge of sewage into Hong Kong waters or communal stormwater drains. Hence, EPD was unable to institute prosecution under the Water Pollution Control Ordinance. Between 2016 and 2022, no NTEH owners were prosecuted for contravening the Water Pollution Control Ordinance.

4.20 In 2023, EPD introduced the ground penetrating radar (see **Figure 3**), which can show the imaged structures in three dimensions on a tablet computer through augmented reality. This non-destructive equipment can detect the structures of different materials at various levels beneath the ground or behind walls, such as underground pipelines, cables, water pipes and reinforcement bars, and assist in tracing the flow of underground sewage and illegal connections. EPD has handled a complaint of seepage from a location between two NTEHs, where both house owners claimed that the other party should be responsible. After using ground penetrating radar to detect the direction of seepage, EPD staff successfully made one of the owners admit responsibility and carry out repairs.

Figure 3: Ground penetrating radar



Figure 4: Image captured by ground penetrating radar



Figure 5: EPD staff using ground penetrating radar to image underground structures (Photography courtesy of EPD)



<u>FEHD</u>

4.21 Between 2016 and 2022, the number of inspections carried out by FEHD ranged from 1.17 to 1.59 per complaint each year. Relevant figures are given below.

Table 7: FEHD's inspections in response to complaints

Year	No. of complaints	No. of inspections	Average no. of inspections
2016	84	112	1.33
2017	102	119	1.17
2018	85	135	1.59
2019	92	118	1.28
2020	91	128	1.41
2021	117	167	1.43
2022	115	152	1.32

4.22 Among the complaints received by FEHD between 2016 and 2022, only four cases were confirmed to have caused environmental hygiene nuisance. FEHD said that in this type of complaint, the cause and source of nuisance often could not be ascertained by visual inspection, and investigation and enforcement by other departments were also involved. Under the division of duties among the departments, very few cases came directly under the purview of FEHD after investigation. Relevant statistics are given below.

Table 8: Cases with environmental hygiene nuisance established and FEHD's follow-up action

Year	No. of cases with environmental hygiene nuisance established	Follow-up action			Average processing time# (days)
		No. of cases referred to other departments	No. of cases with advisory letters issued	No. of cases with Nuisance Notices issued*	
2016	0	2	0	0	41
2017	2	3	1	0	30
2018	1	1	1	4	45
2019	0	0	0	0	37
2020	0	0	0	0	47
2021	1	2	1	2	36
2022	0	0	0	0	36

* As some premises are held by multiple owners, the number of Nuisance Notices issued may exceed the number of cases confirmed to have caused environmental hygiene nuisance.

\# Processing time is calculated between the dates of receiving the complaint and issuing the final reply.

4.23 In 2017, there were two cases confirmed to have caused environmental hygiene nuisance. While the existence of nuisance was confirmed, FEHD, after investigation, was unable to ascertain its source or the persons liable, and hence could not issue a Nuisance Notice. Since these two cases potentially involved environmental pollution caused by leakage from septic tanks due to improper maintenance, FEHD referred the cases to DLO and EPD for follow-up action in parallel. EPD subsequently informed FEHD that the nuisance in these two cases had ceased.

4.24 In respect of the same complaint from 2018, four Nuisance Notices were issued to two owners of the premises under complaint in 2019 and 2021 respectively.

4.25 During this direct investigation, this Office conducted a site visit with FEHD to understand its complaint investigation process. In one case, the complainant reported sewage flowing out of the manhole of an NTEH, but FEHD staff did not find any sewage leakage during multiple inspections. Additionally, there were several other houses near the manhole, making it difficult for FEHD staff to confirm if the manhole belonged to the NTEH under complaint solely based on the site environment.

<u>LandsD</u>

4.26 Between 2017 and 2022, LandsD took lease enforcement action in two cases against defective sewage works of NTEHs. In the first case, EPD informed the relevant DLO in March 2016 that its dye-tracing test had confirmed the leakage of smelly sewage from an NTEH's septic tank onto ground surface, and that alteration had been made to the NTEH's pipework. In April and May 2016, DLO issued advisory letters to the NTEH owner regarding the misconnection of sewers to stormwater drains and required rectification. As leakage from the septic tank persisted, DLO issued a warning letter to the owner (see Case (3) in **Chapter 5**).

4.27 In the second case in June 2021, EPD conducted dye-tracing test and found discharge from an NTEH's soakage pit into stormwater drains nearby. After receiving the test results from EPD, the DLO concerned issued in the same month an advisory letter requiring the owner to carry out inspection and repairs. However, EPD's further dye-tracing tests in July and November 2021 still found sewage from the septic tank in stormwater drains nearby. In January 2022, DLO issued a warning letter requiring the owner to rectify the breach of land lease (see Case (6) in **Chapter 5**).

4.28 LandsD stated that for lease enforcement action, establishing whether an NTEH owner is in breach of the land lease depends on such factors as the content of lease provisions, the nature and severity of the breach. The collection of evidence

relies on the professional judgement of professional departments, and DLOs also need to seek legal advice. Hence, lease enforcement action generally takes time and cannot immediately resolve the environmental pollution and nuisance caused by defective sewage works.

4.29 Meanwhile, if DLOs were to take action of re-entry/vesting solely on the grounds of defective sewage works, the sanction would be disproportionate to the severity of the problem and penalties under other legislation. Consequently, even in cases where a breach of land lease provisions is confirmed, DLOs would generally first issue a warning letter requiring the NTEH owner to rectify the problem. If the problem is not rectified by the deadline, DLOs will register the warning letter in the Land Registry (commonly known as "imposing an encumbrance"). LandsD considered imposing an encumbrance not effective to compel NTEH owners who are living on the premises to face up to the problem. Hence, lease enforcement action is not the optimal solution to address sewage issues.

INTER-DEPARTMENTAL COLLABORATION

4.30 During this direct investigation, EPD proactively invited FEHD to jointly explore how to strengthen cooperation between the two departments, thereby enhancing the efficiency of handling complaints about defective sewage works of NTEHs. In an inter-departmental meeting in October 2022, the two departments agreed to strengthen the mechanism for joint inspections, exchange findings of investigation for discussion to expedite the investigation progress, issue advisory or warning letters jointly where appropriate to NTEH owners/occupiers for greater deterrence, and promptly notify other relevant departments (such as LandsD) for action in parallel where necessary.

4.31 EPD said that a complaint about septic tank was resolved through joint action recently. In April 2022, EPD received a complaint referred by the Home Affairs Department ("HAD") about sewage flowing out of the ground near an NTEH. EPD referred the case to FEHD for action in parallel. During site inspection in the same month, EPD found sewage seeping out from the cracks at the bottom of the NTEH's walls and nearby concrete platform, suspecting that it was related to the NTEH's septic tank. EPD staff then issued warning letters to all relevant parties of the entire NTEH requiring periodic desludging of the septic tank facilities.

4.32 In May 2022, the NTEH's ground floor owner notified EPD that a contractor engaged to inspect the septic tank facilities suspected water was seeping into the septic tank from outside the house, and therefore contacted WSD to inspect the external water mains. After investigation, WSD confirmed in August 2022 that its water mains were not leaking, but discovered a defective underground private drain. Upon learning of the situation, EPD contacted FEHD, LandsD, WSD, HAD and village representatives for joint inspection in September. Dye-tracing tests were conducted at various discharge points in the NTEH. Summing up the findings, it was confirmed that the NTEH's laundry discharges were collected by a stormwater drain underground

suspected to be severely clogged and ruptured, leading to continuous flow of laundry discharges and stormwater into the septic tank system. As the NTEH was located on a slope, during the rainy season, groundwater, together with stormwater and laundry discharges collected by the defective stormwater drain underground, mixed with sewage seeping from the septic tank and flowed out from the cracks at the bottom of the NTEH's walls and nearby concrete platform.

4.33 EPD then issued warning letters urging the owners concerned to carry out necessary repairs to the septic tank, defective stormwater drain and sewage system. During site inspection in October 2022, EPD confirmed that repairs to the underground pipework had been completed, and there was no sewage flowing out from the ground.

4.34 EPD pointed out that this case was complex and significantly different from general cases of overflow or defects of NTEH septic tanks. Hence, it could not be handled by one department alone and inter-departmental collaboration was required, which included WSD to conduct leak noise detection and land excavation at the initial stage, thereby confirming no leakage of its water mains and discovering the defective underground private drain; and EPD to conduct dye-tracing tests during the joint inspection, thereby establishing the root cause of leakage and identifying remedial measures.

5

CASE STUDIES

5.1 From the cases provided by the departments which involved inter-departmental collaboration and took longer time to process, this Office has selected six of them to illustrate the handling of complaints about defective sewage works of NTEHs. Details of the cases are set out below.

CASE (1): NO MECHANISM FOR INFORMATION EXCHANGE AMONG DEPARTMENTS THEREBY AFFECTING EFFICIENCY OF FOLLOW-UP ACTIONS

5.2 In November 2020 and January 2021, FEHD received complaints via 1823 from two members of the public about an NTEH discharging sewage with a foul odour onto a public road. FEHD found stagnant water with a foul odour during site inspection, and referred both cases to LandsD and EPD successively for handling the allegedly defective underground pipework and septic tank in parallel. Although EPD's inspection found sewage near the NTEH in question, there was no leakage into surface channels and thus no illegal discharge of sewage into water bodies nearby. EPD, therefore, could not take further action under the Water Pollution Control Ordinance.

5.3 The DLO concerned, after receiving the cases referred, was unable to confirm the source of leakage, so it requested FEHD to provide the exact location of leakage and relevant information. In response, FEHD provided DLO with photographs taken during its inspection and a geographical location map in February 2021, and at the same time asked DLO to provide the drainage plans of the NTEH in question. Between February and May 2021, FEHD's inspections still found stagnant water on site, but the source of sewage could not be identified. Between March and May 2021, FEHD sent three email reminders to DLO but received no response.

5.4 In late May 2021, FEHD conducted dye-tracing test at the NTEH. The test results obtained by the end of June showed leakage in the pipework of the NTEH's toilet. In July, FEHD issued a Nuisance Notice to require the NTEH owner to carry out repair work. FEHD inspected again in August. Based on the repair receipts produced by the owner and that no water stain was found on site, FEHD was satisfied that the Nuisance Notice had been complied with. During the inspection, the complainant also indicated that the situation had improved.

5.5 In response to our request for case records during this direct investigation, DLO searched its records and found that after receiving the referrals from FEHD in November 2020 and February 2021, it had requested FEHD to provide the exact location and relevant information. As no reply was received from FEHD, DLO could not take further action. In December 2022, DLO asked FEHD about the latest situation of this case and learned that the Nuisance Notice issued by FEHD in July 2021 had been complied with. DLO also clarified with FEHD that it had not received the latter's request for drainage plans and email reminders, nor was it in possession of the NTEH's drainage plans.

CASE (2): ON THE ONE HAND, DEPARTMENTS FAILING TO IDENTIFY THE SOURCE OF POLLUTION THROUGH THEIR OWN INVESTIGATION, AND ON THE OTHER HAND, NO JOINT INSPECTION ARRANGED PROMPTLY TO DEAL WITH THE PROBLEM

5.6 In January 2020, the resident on the ground floor of an NTEH complained to 1823 about illegal discharge of sewage from the premises upstairs. 1823 referred the case to EPD and FEHD. In the same month, the complainant told EPD that sewage with dog stools had been discharged via a pipe by the upstairs premises after rinsing the roof, which flowed into the ground and pipework seemingly maintained by the District Office of HAD. Moreover, sewage was suspected of being discharged into the surface channels nearby, causing environmental hygiene problems. Although not finding any discharge during site inspection, EPD found matters suspected to be dog stools and hairs near the pipe outlet. Its dye-tracing test at the location indicated no presence of dye in the surface channels nearby. Nevertheless, EPD verbally advised the upstairs household not to discharge waste into the pipe concerned and explained the findings to the complainant. EPD also requested 1823 to refer the case to FEHD and DLO for further action.

5.7 In February 2020, FEHD found a sieve with light brown solids at the pipe outlet. The complainant alleged that the pipe was illegally installed. In March, FEHD issued an advisory letter to the upstairs household regarding the discharge of waste via the rooftop stormwater drain, and required inspection of the sewers and stormwater drains. FEHD also referred the case to EPD, LandsD and Buildings Department ("BD") for action in parallel. BD replied that NTEH sewage works were not within its purview. EPD replied that it had received a similar complaint previously but no violation of environmental legislation was found; nevertheless it was willing to conduct joint inspection with other departments if necessary. DLO replied in June, requesting FEHD and EPD to first confirm whether a hygiene nuisance existed; and that after the irregularity was established by the two departments, DLO would consider lease enforcement action.

5.8 In January 2021 (i.e. about one year later), the complainant told FEHD that the problem of illegal discharge persisted. FEHD issued another advisory letter to the

upstairs household and referred the case to LandsD and EPD again in April. EPD proposed joint inspection again. In May, FEHD and EPD conducted joint inspection and dye-tracing tests on the complainant's and the upstairs premises. It was discovered that the sewers of the complainant's toilet on the ground floor were misconnected to stormwater drains. FEHD issued an advisory letter requiring rectification. In June and August 2021, FEHD conducted further site inspections and no hygiene nuisance was found.

CASE (3): IMPROPER ALTERATION OF PIPE EASILY CAUSING POLLUTION

5.9 In January 2016, EPD received a complaint about leakage of sewage from an NTEH's septic tank. During multiple inspections, EPD found sewage with a slight odour next to the NTEH in question each time. In March, EPD's dye-tracing test confirmed that the NTEH's septic tank was leaking sewage into the ground. EPD informed the complainant of the findings and issued a letter to the NTEH owner concerned, reminding him that the discharge of sewage is regulated under the Water Pollution Control Ordinance and proper treatment is required for all wastewater.

5.10 EPD referred the case to DLO and FEHD in parallel. EPD informed DLO that dye-tracing test results revealed abnormal leakage from the NTEH's septic tank; and that a case about improper alteration of pipe concerning the same NTEH had been referred by EPD previously in 2015, but the situation had not improved. Separately, EPD asked FEHD to handle the odour and hygiene problems.

5.11 Since the NTEH owner had not been required by DSD to submit drainage proposals before DLO approved the application for construction, DLO was not in possession of the NTEH's drainage records. DLO, therefore, informed EPD that it would seek DSD's advice on the alteration of pipe, and that it had already received a reply from the District Office of HAD indicating that the NTEH owner had carried out repairs in respect of the previous complaint about alteration of pipe. As the pipework in question had not been subject to approval by DSD, DLO, upon referring the case to DSD, stated that there was no evidence of the alteration of pipe being in breach of the land lease. DLO also referred the case to FEHD, stating that EPD had confirmed the existence of abnormal leakage from the septic tank, and asking FEHD to consider follow-up action in parallel with DLO.

5.12 Regarding the leakage of septic tank, DLO issued an advisory letter to the land owner concerned in April 2016, stating that EPD's testing on site revealed leakage from the septic tank of his NTEH. DLO required the land owner to rectify as soon as possible to resolve the problem of sewage outflow. DSD, in reply to DLO, stated that after site inspection, it suspected a misconnection of the NTEH's sewers to the stormwater drainage system. DLO then asked EPD whether the NTEH's sewers were misconnected to the stormwater drainage system. EPD replied that the NTEH's defective pipework had already been identified in the previous complaint, where EPD

had requested DLO to urge the owner to rectify the problem as soon as possible. In May 2016, DLO issued another advisory letter requiring the owner to rectify the misconnection of sewers to stormwater drains within a month.

5.13 FEHD conducted inspections in May and August 2016, during which it found no seepage or stagnant water, and the hygiene situation was satisfactory.

5.14 In September 2016, DLO informed DSD, FEHD, EPD, and the District Office of HAD that the misconnection of the NTEH's sewers to stormwater drains had been rectified. However, the complainant alleged that the environmental hygiene problem persisted, and asked the departments to follow up. In the same month, DSD's inspection confirmed that the sewers in question had been connected to the septic tank, but sewage was leaking from the septic tank thereby affecting environmental hygiene. During inspection in October 2016, FEHD only found a small amount of stagnant water on site, so it cleared the stagnant water and carried out mosquito control. At the same time, it informed DLO that the complainant was concerned about the leakage of septic tank, and asked DLO to consider lease enforcement action.

5.15 In November 2016, at the request of DLO, EPD provided again the dye-tracing test results obtained in March 2016. In March 2017, in light of EPD's findings that sewage was flowing out of the NTEH's septic tank and soakaway system, constituting a suspected breach of lease provisions, DLO issued a warning letter requiring the NTEH owner to appoint an Authorised Person/Registered Structural Engineer/Registered Professional Engineer to properly inspect and repair the sewage system, and to provide within 28 days from the date of the letter a report from the Authorised Person/Registered Structural Engineer/Registered Professional Engineer certifying that the sewage system was in proper working order without any leakage. In May 2017, DLO received an Authorised Person's report submitted by the owner, and its subsequent site inspection found no sewage leaking from the septic tank.

CASE (4): DEPARTMENTS HAVING DIFFICULTY IN HANDLING THE CASE IF PROPERTY OWNER WAS UNCOOPERATIVE

5.16 In July and September 2019, FEHD received two complaints about sewer leaks and poor maintenance of septic tanks of two NTEHs ("House A" and "House B"), which emitted unpleasant odours. As FEHD's inspection did not reveal any environmental hygiene problem and the cases might also involve illegal construction of septic tanks and discharge of sewage, the cases were referred to LandsD and EPD for further action.

5.17 In February 2020, one of the complainants provided additional information to DLO, alleging that House A and House B were discharging sewage into the stormwater drains nearby and their septic tanks were defective. DLO referred the cases to EPD to follow up on the illegal discharge of sewage in parallel. In March 2020, regarding the complaint of illegal discharge, EPD sent a letter requiring the NTEH

owners concerned to promptly inspect the NTEH sewage works and carry out repairs. Subsequently, the owner of House B informed EPD that the septic tank had been desludged and provided photos (including photos of sealing the septic tank's overflow pipe) and receipts from the contractor undertaking inspection of the septic tank. The owner of House A informed EPD that he had been required by DLO and FEHD to rectify the septic tank problem and would arrange for inspection by a contractor.

5.18 In April 2020, the complainant notified EPD that there was still a foul odour on site. In response to enquiry about the case, EPD gave a reply to DLO, suggesting that the latter take action against the NTEH sewage systems within its regulatory regime and purview. Since EPD had not provided information or dye-tracing records to establish the source of seepage, DLO considered there was insufficient evidence to take action against a suspected breach of the land lease. Nevertheless, DLO issued in the same month an advisory letter requiring the owner of House A to repair the defective septic tank. In May 2020, during EPD's another site inspection, the owner of House B claimed that the overflow pipe connecting the septic tank to stormwater drains had been sealed, but he refused to allow EPD to open the septic tank for inspection. The cover of stormwater drains had also been sealed. As such, EPD sought assistance from DLO to enter the area of House B for inspecting the stormwater drains located on Government land.

5.19 In September 2020, based on EPD's findings that the owner of House B had fenced off Government land outside his house without permission, DLO took land control action. In October 2020, DLO and EPD conducted joint inspection and confirmed that the overflow pipe of the septic tank had been sealed.

CASE (5): FAILING TO CURB THE PROBLEM EFFECTIVELY DESPITE FOLLOW-UP ACTIONS OF DEPARTMENTS

5.20 In January 2018, FEHD received a complaint through 1823 about a clogged manhole in the rear lane of an NTEH with sewage and waste flowing out, causing a foul odour and affecting environmental hygiene in the vicinity. Subsequently, the complainant filed multiple complaints about recurring incidents of sewage seepage. The case was referred to FEHD, DLO, EPD and the Architectural Services Department ("ArchSD") for action.

5.21 In December 2018 and February 2019, DLO issued letters requiring the NTEH owner to promptly fix and desludge the clogged manhole. In April 2019, DLO issued another letter to the owner, stating that a joint inspection conducted by FEHD, EPD, LandsD and ArchSD in the same month revealed faulty design of the manhole outlet, which hindered proper drainage and caused blockage, and requiring the owner to carry out improvement works promptly. In May, the owner informed FEHD that repairs had been carried out. Yet, in June, the complainant complained about sewage seepage again. The relevant departments provided the owner with professional advice again, and the owner replied that repairs would be carried out promptly. In July 2019,

the owner informed EPD that improvement works had been completed. However, the complainant continued to complain about sewage seepage subsequently.

5.22 Most of FEHD's inspections did not reveal any overflow of sewage from the manhole in question. FEHD staff only witnessed sewage seepage during two inspections in November 2019 and December 2020. Accordingly, FEHD issued Nuisance Notices to the NTEH owner in December 2019 and January 2021. After conducting compliance inspection and dye-tracing test subsequently, FEHD confirmed that there was no sewage or dye flowing out of the manhole, and thus considered the Nuisance Notices to have been complied with. FEHD also pointed out to DLO that the problem should be tackled at the root (i.e. the faulty design). As for EPD, since most of its inspections did not find any sewage seepage from the manhole or any polluting matter in the stormwater drains nearby, it considered there was no violation of the Water Pollution Control Ordinance. EPD also pointed out that the crux of the problem lay in the owner's failure to properly repair and maintain the manhole, resulting in repeated clogging. It requested DLO to invoke the relevant lease provisions and require rectification by the owner, so as to thoroughly resolve the problem.

5.23 DLO had issued multiple advisory letters to the NTEH owner. Nonetheless, it believed that the case also involved water pollution, sewage discharge and environmental nuisance regulated under existing legislation enforced by FEHD and EPD. DLO had sought legal advice on whether the sewage overflow constituted a breach of the land lease, but it was advised that the evidence was insufficient to establish a breach. Hence, no lease enforcement action was taken eventually.

CASE (6): DEPARTMENTS NOT UNDERSTANDING THE ENFORCEMENT CONSTRAINTS FACED BY OTHERS

5.24 In May 2021, EPD conducted an inspection in response to a complaint about obnoxious odour caused by leakage from the septic tank of an NTEH. No signs of abnormal leakage were found near the septic tank, but it was suspected that the inlet of the septic tank's drainage pipe was defective. As the case involved suspected faulty design of the septic tank, EPD referred the case to DLO. In June 2021, EPD conducted dye-tracing test on the soakage pit and found that it discharged sewage into the stormwater drains nearby. In addition to issuing an advisory letter to the NTEH owner, EPD also forwarded the findings to DLO. In the same month, DLO issued an advisory letter requiring the NTEH owner to appoint professionals to carry out inspection and repairs within 28 days from the date of the letter.

5.25 In July 2021, FEHD received another complaint regarding the same location and referred it to EPD. In the same month, EPD conducted another site inspection and found that the relevant pipes were still misconnected to the stormwater drains. The case was then referred to DLO. In the following month, DLO asked EPD whether the discharge of sewage from the septic tank into the stormwater drains had persisted for it to consider lease enforcement action. In reply to DLO in September, EPD stated that

its site inspection and dye-tracing test in August revealed that the irregularity had not been rectified.

5.26 In September and December 2021, 1823 referred the same complaint to LandsD again. LandsD said that the case had been referred by EPD earlier and further investigation would be conducted. In December, EPD informed DLO that it conducted dye-tracing test again in November and found presence of sewage from the septic tank in the stormwater drains nearby. Since the irregularity had persisted since May 2021, it urged DLO to take lease enforcement action as soon as possible.

5.27 In reply to EPD in January 2022, DLO said that it had no expertise in pollution or drainage, nor could it confirm whether the irregularity had been rectified as claimed by the NTEH owner; besides, the process of lease enforcement action generally took time. DLO, therefore, considered lease enforcement action inappropriate and suggested that EPD take enforcement action under the Water Pollution Control Ordinance. EPD replied that due to the stringent threshold for prosecution under the Water Pollution Control Ordinance, it had difficulty in collecting sufficient samples of wastewater in leakage cases. Consequently, such cases were usually referred to LandsD for it to invoke land lease provisions and require NTEH owners to rectify the problem at the root. EPD added that DLO could require the NTEH owner to present professional reports certifying that necessary rectifications had been made, and that EPD could assist in conducting dye-tracing tests.

5.28 After reviewing the complaint and EPD’s proposal to assist in conducting dye-tracing tests, DLO issued a warning letter in January 2022 to the NTEH owner, stating that sewage was leaking from his septic tank and soakaway system in breach of the lease provisions. The owner was required to appoint an Authorised Person/Registered Structural Engineer/Registered Professional Engineer to properly inspect and repair the sewage system, and to provide within 28 days from the date of the letter a report from the Authorised Person/Registered Structural Engineer/Registered Professional Engineer certifying that the sewage system was in proper working order without any leakage.

5.29 In February 2022, a family member of the NTEH owner informed DLO that improvement works had been completed, and attached photos as proof. During site inspection in March 2022, DLO did not find any sewage leakage, and it requested EPD to conduct dye-tracing test to confirm that the leakage had ceased.

6

COMMENTS AND RECOMMENDATIONS

PREAMBLE

6.1 Defective sewage works of NTEHs, such as rupture or leakage of septic tanks, may cause serious environmental pollution and even spread diseases. Although the Government has been implementing the Village Sewerage Programme, more than 40% of villages throughout the territory not yet covered by the Programme (see **para. 2.35**) will have to continue to rely on septic tank systems for treatment of sewage from NTEHs in the foreseeable future.

6.2 To address complaints about defective sewage works of NTEHs, EPD enforces the Water Pollution Control Ordinance from the perspective of identifying any pollution caused to the waters of Hong Kong or sewage discharged into stormwater drains; FEHD investigates the existence of any nuisance specified in the Public Health and Municipal Services Ordinance; LandsD takes lease enforcement action, where appropriate, after examining whether the defects are in breach of the sewage provisions in the land leases. As the enforcement responsibilities are scattered, inter-departmental collaboration is of paramount importance. Otherwise, the departments will be unable to resolve problems effectively, or their efforts will bear limited results.

6.3 In light of our findings, this Office has the following comments and recommendations regarding the enforcement by EPD, FEHD and LandsD against defective sewage works of NTEHs.

OUR COMMENTS

Inadequate Inter-departmental Collaboration in Complaint Handling

6.4 The construction of NTEHs is subject to the approval of LandsD. The certificate of exemption in respect of drainage works issued by LandsD stipulates that NTEHs should comply with the Drainage and Health Requirements for Village Type Houses, which cover a wide range of technical standards, including that the septic tank

should be maintained in proper working order at all times by the house owner/occupier, and periodic desludging should be performed where necessary. EPD and FEHD are the major authorities for enforcement against environmental pollution or hygiene nuisance caused by defective sewage works.

6.5 EPD's information showed that between 2016 and 2022, more than 60% of the complaints received by it involved other departments (see **Table 3** in **para. 4.12**), i.e. most were inter-departmental cases. Our investigation found that each department has constraints in handling this type of complaints, resulting in their inclination to refer complaints to other departments, but they only have a limited understanding of the constraints faced by the others. As a result, complaints remain unresolved even after repeated shuffling among departments. The understanding of EPD, FEHD and LandsD regarding their own functions and powers as well as the follow-up actions that can be taken by the other departments is summarised below.

- EPD:

(i) Most complaints only involved the overflow and abnormal leakage of septic tank systems, which affected the environment and hygiene in the vicinity, rather than direct discharge of sewage into Hong Kong waters or communal stormwater drains. Consequently, these cases might not constitute a violation of the Water Pollution Control Ordinance and EPD was often unable to take enforcement action under the Ordinance.

(ii) Even in cases of sewage discharged into Hong Kong waters or communal stormwater drains, EPD is required to collect a water sample of 3 litres to satisfy the stringent standard of proof under the Ordinance. However, the standard is too onerous for cases concerning NTEH sewage works, making it impossible for EPD to institute prosecution.

(iii) EPD believes that this kind of problem can be properly handled by LandsD pursuant to the sewage provisions in land grant documents. LandsD can, at the initial stage and at the source, regulate the construction, maintenance and operation of septic tank systems, and require householders to carry out rectification or improvement. Separately, FEHD can follow up from the perspective of environmental hygiene nuisance, especially in cases not involving sewage discharged into Hong Kong waters or communal stormwater drains.

- FEHD:

(i) Since FEHD conducts criminal investigation pursuant to the relevant legislation, the standard of proof is very stringent. Before issuing a Nuisance Notice, it needs to first establish the existence of nuisance, and then conduct further investigation into the source and cause of nuisance. Besides, the investigation should not cause damage to

private facilities, but the source and cause of hygiene nuisance in this type of complaints often cannot be ascertained by visual inspection. FEHD has no expertise in the structural, design and connection problems of NTEH sewage works.

(ii) Based on the division of duties among the departments, FEHD will refer cases involving failure to connect sewage works to wastewater treatment facilities (including direct connection of sewers to stormwater drains) to EPD. Cases involving leakage of sewage from septic tanks due to improper maintenance will be referred to LandsD and EPD.

(iii) FEHD also believes that if LandsD and EPD have sufficient powers of enforcement against illegal alteration or defective septic tank systems, the problem can be effectively tackled at the source rather than handled only after it has worsened and become a hygiene nuisance. In this light, owners of septic tank systems should be required to carry out periodic maintenance and repairs, and keep proper records for inspection by relevant departments.

- LandsD:

(i) In respect of lease enforcement action, establishing whether NTEH owners are in breach of the land lease depends on such factors as the content of lease provisions, nature and severity of the breach. The collection of evidence relies on the professional judgement of professional departments, and DLOs also need to seek legal advice. As a result, lease enforcement action generally takes time and cannot immediately alleviate the environmental pollution and nuisance caused by defective sewage works.

(ii) LandsD believes that for NTEH owners who are living on the premises, imposing an encumbrance against their property will not compel them to face up to the problem. Hence, lease enforcement action is not the optimal solution to address sewage issues.

(iii) NTEH sewage works have been monitored primarily by means of enforcement under the purview of EPD and FEHD.

6.6 The above analysis shows that the three departments have different views on the division of responsibilities. Our case studies also reveal inadequacies on the part of the three departments in referring and following up on complaints. In Case (6), after discovering that the case involved faulty design of the septic tank, EPD referred the case to LandsD for lease enforcement action and provided the dye-tracing test results repeatedly. However, DLO claimed that it had no expertise to confirm whether the irregularity had been rectified, and lease enforcement action generally took time, so it counter-suggested that EPD take enforcement action under the Water Pollution Control

Ordinance. Eventually, it was only after EPD had explained the prosecution threshold under the Water Pollution Control Ordinance and the difficulty in adducing evidence that DLO issued a warning letter to the NTEH owner (see **para. 5.28**).

6.7 In Case (2), the complaint was first handled by EPD, and dye-tracing test results revealed no discharge of sewage into stormwater drains. Although EPD continued to follow up on the case after giving verbal advice to the NTEH owner, it did not make any further efforts to identify the source of pollution, and the case was referred to FEHD and DLO. After receiving the case, FEHD issued an advisory letter to the owner and referred the case back to EPD. It was only after repeated complaints lodged by the complainant that FEHD and EPD conducted joint inspection and successfully identified the source. By then about one year and four months had elapsed since the complainant's initial complaint (see **paras. 5.6 and 5.8**). In Case (5), EPD, FEHD and LandsD could not do anything about the intermittent leaks from a manhole, and each of them only expected the other departments to deal with the problem (see **paras. 5.22 and 5.23**).

6.8 These cases show that despite the long existence of NTEHs, the three responsible departments still do not have a clear understanding of the actions that can be taken by and the enforcement constraints of one another in respect of sewage works. There are also no established guidelines among them on how to pursue this type of complaints under different scenarios, such as which department should conduct dye-tracing tests, how to apply and whether to share the test results with other departments, the circumstances under which joint inspection should be conducted, which department should take enforcement action, etc. Without a common understanding, each department refers and handles complaints merely based on its own knowledge of the other departments' duties. As a result, problems remain unresolved even after repeated shuffling among departments. The situation is indeed unsatisfactory.

6.9 This Office recommends that EPD, FEHD and LandsD set up an inter-departmental working group to provide a communication platform regarding their respective functions and constraints, with a view to complementing each other; the working group can also discuss solutions to complicated cases at an early stage to achieve synergy.

6.10 To enhance the effectiveness of enforcement, EPD, FEHD and LandsD should draw up operational guidelines for frontline staff specifying concrete follow-up and referral actions in typical scenarios of complaints, thereby rationalising the responsibilities and procedures for inter-departmental cases.

6.11 Meanwhile, EPD and FEHD can enforce the Water Pollution Control Ordinance and the Public Health and Municipal Services Ordinance respectively according to circumstances. Nevertheless, both departments currently focus more on whether they can enforce the legislation on their own and seldom consider joint enforcement actions. For cases of sewage discharged into stormwater drains, apart from handling by EPD pursuant to the Water Pollution Control Ordinance, FEHD should

be able to follow up from the perspective of environmental hygiene if it can establish that the outflow of sewage is a nuisance or injurious or dangerous to health, as well as identify its source and cause. This Office reckons that the two departments should explore room for enforcement cooperation, such as identifying the circumstances for taking joint actions to enhance the effectiveness.

No Mechanism for Information Exchange

6.12 EPD, FEHD and LandsD might obtain different information when following up on cases about defective sewage works of NTEHs. Our investigation revealed no established mechanism for information exchange among the departments and this may compromise the enforcement efficiency. EPD and FEHD, as the enforcement authorities, have no mechanism for exchanging information and results (e.g. dye-tracing tests) obtained during investigation to facilitate appropriate actions by each other, as shown in Case (3) (see **para. 5.10**). Some cases also revealed that the departments were not fully aware of the types of information held by others. For example, in Case (1), FEHD requested DLO to provide drainage plans of the NTEH to assist in the investigation, but in fact DLO was not in possession of such plans (see **para. 5.5**). The case also illustrated that without an information exchange mechanism, inter-departmental referrals and enquiries might become problematic. In the same case, FEHD requested information from DLO to facilitate its investigation and follow-up action, but no reply was received despite three email reminders. Following our investigation, LandsD clarified that DLO had not received the information request and email reminders from FEHD at that time. On the other way round, DLO had requested FEHD to provide information but the latter did not reply. The case vividly showed that the communication between the departments' frontline staff was chaotic and unsatisfactory.

6.13 Between 2016 and 2022, EPD found improvement to sewage works required in an average of 47 cases per year (see **para. 4.17**), while FEHD only found a total of four cases confirmed to have caused environmental hygiene nuisance during the same period (see **para. 4.22**), far less than the figure of EPD. However, given the higher prosecution threshold under the Water Pollution Control Ordinance, EPD has difficulty in instituting prosecution even if there is pollution of stormwater drains, and very often it can only issue advisory/warning letters and refer the cases to other departments for further action. On the contrary, FEHD may issue a Nuisance Notice under the Public Health and Municipal Services Ordinance as long as the source of nuisance and the NTEH owner concerned can be identified. As complaints about defective sewage works of NTEHs often involve technical issues such as structural, design and connection problems, FEHD's investigation alone would be ineffective to identify the source. This Office believes that an effective mechanism for exchange of findings between EPD and FEHD will certainly facilitate their enforcement.

6.14 We are pleased to note that after the launch of our investigation, EPD and FEHD have started discussion to strengthen cooperation on areas including information exchange (see **para. 4.30**). In our view, LandsD should also participate in the

mechanism for information exchange. This is because as the approving authority for construction of NTEHs, LandsD knows the as-built condition of NTEHs and their sewage works, and such information may facilitate the investigation of EPD and FEHD. On the other hand, LandsD may take lease enforcement action in case of non-compliance, subject to the provision of findings by EPD and FEHD. This Office recommends that the three departments devise a proper mechanism for information exchange through the inter-departmental working group proposed above, so as to enhance the effectiveness and efficiency of complaint handling.

LandsD Should be More Proactive in Taking Lease Enforcement Action and Monitoring Case Progress

6.15 Between 2016 and 2022, LandsD received an average of about 918 complaints related to general drainage facilities per year [8], while EPD and FEHD received about 280 and 98 respectively (see **Table 3** in **para. 4.11**).

6.16 Our case studies revealed room for improvement on the part of LandsD in following up on complaints. In Case (4), after the owner had refused to open the stormwater drains for inspection, EPD sought assistance from DLO to enter the area of NTEH for inspecting the stormwater drains on Government land. However, DLO only took land control action some four months later, which cast doubt on its proactiveness in assisting EPD (see **paras. 5.18 and 5.19**). As for Case (6), although EPD had provided dye-tracing test results repeatedly to prove the faulty design of the NTEH's septic tank, DLO was initially reluctant to take lease enforcement action on the grounds of various technical issues, and only suggested that EPD take enforcement action under the Water Pollution Control Ordinance. It was only after EPD had explained the situation that DLO eventually issued a warning letter to the owner (see **paras. 5.27 and 5.28**). In our view, LandsD should have demonstrated greater determination to address cases with obvious irregularities.

6.17 Moreover, LandsD has only recorded the total number of complaints received without any breakdown or further statistics, such as a breakdown of complaints by type of sewage works (i.e. septic tank, manhole, pipework, etc.), the number of inspections, the number of cases with defective sewage works identified and action taken, and the average number of processing days (see **para. 4.13**). Without data analysis, it is indeed difficult for LandsD to monitor the progress of complaint cases effectively. The situation is far from satisfactory.

6.18 LandsD said that cases of pollution and environmental hygiene nuisance caused by NTEH sewage works have all along been handled and enforced against by EPD and FEHD; it also stressed that land lease provisions are not an effective means of enforcement. While recognising LandsD's enforcement constraints, this Office reckons that it is not entirely outside the department's purview to handle complaints about NTEH sewage works. As mentioned above, EPD, FEHD and LandsD each have

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[8] See **para. 4.12**.

their own enforcement constraints, and the departments need to complement one another in order to resolve problems effectively. Currently, LandsD merely focuses on referring complaints to EPD and FEHD without fully discharging its enforcement role.

6.19 This Office urges LandsD to formulate a monitoring mechanism for complaint cases, conduct data analysis and proactively assist other departments where necessary; if a breach of land lease provisions is confirmed, LandsD should take lease enforcement action decisively.

Training of LandsD's Staff Should be Strengthened

6.20 LandsD is responsible for approving the construction of NTEHs including their sewage works. LandsD claimed that since it is not a professional department specialising in sewage works, the grantee/licensee is required, when applying for certificates of exemption, to sign and confirm the appointment of a building contractor to construct the NTEH, and a T2 competent person to supervise the construction of the entire building (including site formation and drainage works) (see **para. 2.11**).

6.21 The staff of DLOs will inspect NTEHs under construction, and conduct further inspection before issuing a certificate of compliance/letter of no objection to occupy (see **paras. 2.14 and 2.15**), including checking by visual inspection whether sewage generated from the toilet and kitchen is discharged into the septic tank and reviewing items on the "Installation of Drainage Works" checklist.

6.22 Our case studies revealed various kinds of misconnection or faulty sewage works. For example, in Case (2), a toilet's sewers were misconnected to stormwater drains (see **para. 5.8**); in Case (4), the septic tank's overflow pipe was misconnected to stormwater drains (see **para. 5.17**); in Case (6), the septic tank's design was faulty (see **para. 5.24**).

6.23 In our view, it is particularly crucial to ensure the proper construction and connection of NTEH sewage works. Otherwise, these facilities would not only cause pollution easily, but also require more frequent maintenance and repairs afterwards, and involve a higher risk of damage. As a matter of fact, as the approving authority for the construction of NTEHs, LandsD has no expertise in sewage facilities. This inevitably casts doubt on its ability to make an accurate assessment of the compliance of NTEH sewage works during the approval process.

6.24 If complaints about defective sewage works are received after occupation of an NTEH, the investigation and enforcement work will be led by EPD and FEHD. The two departments should have certain experience and know-how in dealing with the pollution and environmental hygiene nuisance caused by faulty construction and misconnection of sewage works. This Office recommends that LandsD strengthen the training of staff of DLOs through experience sharing by EPD and FEHD, such that they are well equipped to inspect sewage works upon the completion of NTEHs to prevent possible environmental hygiene problems at root.

Problems Caused by Improper Alteration of Sewage Pipes

6.25 LandsD said that existing control of NTEH sewage works mainly concerns the septic tank and soakaway systems, and prior permission from DLOs is required for change of the location of septic tank and soakaway systems. Separately, depending on site constraints or where applicable, prior to the granting of approval by DLOs for the construction of NTEH or issuing a certificate of exemption in respect of drainage works, applicants might need to submit drainage plans or drainage proposals as required by DSD and implement the drainage facilities to the satisfaction of DSD. If drainage plans or drainage proposals were submitted to DSD upon application for the construction of an NTEH, its owner would need to obtain prior permission from DSD for any alteration to sewage pipes after occupation; otherwise it might constitute a breach of the relevant provisions under the certificate of exemption. If submission of drainage plans or drainage proposals is not required by DSD upon construction of an NTEH, then DLOs would not normally ask the applicant to submit such plans for approval; after occupation, the owner would not need prior permission from LandsD or DSD for alteration to sewage pipes.

6.26 Our case studies revealed that pollution caused by misconnection or improper alteration of sewage pipes was not uncommon, as shown in Cases (2), (3) and (4). If an owner's arbitrary alteration of sewage pipes results in improper discharge, it may be difficult to trace the source of pollution in future. In particular, owners who have been required by DSD to submit drainage plans or drainage proposals upon application for the construction of an NTEH should obtain prior permission from DSD under the prevailing requirements for any alteration of sewage pipes after occupation.

6.27 In this light, we consider LandsD should step up publicity and education on the environmental hygiene problems caused by improper alteration of sewage pipes. On the one hand, NTEH owners should be reminded to obtain prior permission from relevant departments, where applicable under the prevailing requirements, for any alteration of sewage pipes for monitoring by the departments; on the other hand, even where no prior permission from departments is required, owners should be advised to seek assistance from professionals to ensure proper alterations.

Need to Explore Measures Urging Owners to Fulfil Maintenance Responsibility

6.28 The land grant provisions of an NTEH generally require the grantee/licensee to construct suitable drainage works for the proper treatment and disposal of sewage/ wastewater generated by the NTEH; and/or not to permit sewage/wastewater to flow onto any adjoining land (see **para. 2.9**). The certificate of exemption in respect of drainage works issued by LandsD stipulates that NTEH drainage works should comply with the Drainage and Health Requirements for Village Type Houses, including that the septic tank should be maintained in proper working order at all times by the house owner/occupier and periodic desludging should be performed where necessary (see **para. 2.19**).

6.29 LandsD asserted that according to prevailing requirements, NTEH owners are responsible for proper treatment and disposal of sewage, as well as periodic inspection of sewage works. However, under the prevailing regulatory regime, no substantive measures are in place to ensure NTEH owners' fulfilment of their responsibility for proper sewage treatment and maintenance of sewage works.

6.30 LandsD stressed that EPD and FEHD take the lead in enforcement against pollution and environmental hygiene nuisance caused by defective sewage works of NTEHs. Nevertheless, as discussed in **paragraph 6.5**, EPD and FEHD each have constraints in enforcement. Given that most NTEHs had sewage works installed underground, any defect or disrepair might remain undetected until problems emerge and by then a considerable level of environmental pollution or nuisance might have already been caused. After all, enforcement is only a remedial response. It is indeed more crucial to take preventive measures.

6.31 This Office urges LandsD to explore formulating concrete measures to ensure NTEH owners know how to effectively fulfil their responsibility for proper sewage treatment and maintenance of sewage works in order to comply with the requirements of the land lease and the certificate of exemption. For example, LandsD may advise NTEH owners to engage professionals for periodic inspection and necessary maintenance and repairs of sewage facilities (such as septic tank systems) posing a higher potential risk to environmental hygiene, or even insert land grant provisions requiring owners to submit inspection records issued by relevant professionals to certify that the facilities are in proper working order. As LandsD is not a professional department specialising in sewage works, it may consider consulting other professional departments to formulate relevant measures if necessary.

Publicity and Public Education on Correct Use and Maintenance of Septic Tanks Should be Stepped up

6.32 NTEH owners have undeniable responsibility for proper maintenance of their sewage works. Information on the correct use and maintenance of septic tanks is mainly provided in the Guidance Notes on Discharges from Village Houses issued by EPD (see **paras. 2.26–2.28**). The document is rather technical and difficult for laymen to grasp the essential points.

6.33 Following the launch of our direct investigation, EPD initiated a publicity campaign in late 2022 targeting villages not yet connected to public sewers. In particular, EPD has written to the relevant village representatives, inviting them to remind householders about the correct use and regular inspection of septic tank systems. It has also created a new webpage and a set of magnetic stickers as publicity materials with a QR code linking to the webpage, which lists the points to note when using septic tank systems and details of desludging contractors (see **paras. 3.7 and 3.8**).

6.34 This Office recommends that EPD further utilise electronic means and social media, produce promotional videos, etc. to raise NTEH owners' awareness of the

importance of the correct use and proper maintenance of septic tanks and related information.

Application of Technology

6.35 EPD and FEHD often use the traditional method of dye-tracing test to track the pollution source. Nevertheless, to conduct dye-tracing test, staff have to enter the NTEHs and inject dyes into the sewage works. The investigation process will be impeded if the owners are uncooperative. Moreover, there is uncertainty as to when the dyes will appear after injection, which may range from one to two hours to a few days, such that the departments may have difficulty in deploying staff to observe the results.

6.36 We note that EPD has introduced new technology as an additional investigative tool (see **para. 4.20**). Its use of ground penetrating radar, coupled with augmented reality technology, for locating the source of water seepage not only reduces the inconvenience to households caused by making entry of their premises to apply dyes, but also produces strong evidence to convince NTEH owners to carry out proper repairs. EPD's active use of innovative technology is commendable. As the new technology is still in an initial stage of application, we opine that EPD may consider its more extensive use in due course for more effective detection of the seepage source, with a view to enhancing the effectiveness of complaint handling and investigation.

OUR RECOMMENDATIONS

6.37 In sum, our recommendations are:

EPD, FEHD and LandsD

(1) set up an inter-departmental working group to provide a communication platform regarding their respective functions and constraints, with a view to complementing one another and discussing solutions to complicated cases at an early stage to achieve synergy (see **para. 6.9**);

(2) draw up operational guidelines for frontline staff specifying concrete follow-up and referral actions in typical scenarios of complaints, thereby rationalising the responsibilities and procedures for inter-departmental cases (see **para. 6.10**);

(3) devise a proper mechanism for information exchange so as to enhance the effectiveness and efficiency of complaint handling (see **para. 6.14**);

EPD and FEHD

(4) for cases of sewage discharged into stormwater drains, explore room for enforcement cooperation, such as identifying the circumstances for taking joint actions to enhance the effectiveness (see **para. 6.11**);

LandsD

(5) formulate a monitoring mechanism for complaint cases, conduct data analysis and proactively assist other departments where necessary; if a breach of land lease provisions is confirmed, take lease enforcement action decisively (see **para. 6.19**);

(6) strengthen the training of staff of DLOs through experience sharing by EPD and FEHD, such that they are well equipped to inspect sewage works upon the completion of NTEHs to prevent possible environmental hygiene problems at root (see **para. 6.24**);

(7) step up publicity and education on the environmental hygiene problems caused by improper alteration of sewage pipes. On the one hand, NTEH owners should be reminded to obtain prior permission from relevant departments, where applicable under the prevailing requirements, for any alteration of sewage pipes for monitoring by the departments; on the other hand, even where no prior permission from departments is required, owners should be advised to seek assistance from professionals to ensure proper alterations (see **para. 6.27**);

(8) explore formulating concrete measures to ensure NTEH owners know how to effectively fulfil their responsibility for proper sewage treatment and maintenance of sewage works in order to comply with the requirements of the land lease and the certificate of exemption (see **para. 6.31**);

EPD

(9) further utilise electronic means and social media, produce promotional videos, etc. to raise NTEH owners' awareness of the importance of the correct use and proper maintenance of septic tanks and related information (see **para. 6.34**); and

(10) consider more extensive use of new technology in due course for more effective detection of the seepage source, with a view to enhancing the effectiveness of complaint handling and investigation (see **para. 6.36**).

ACKNOWLEDGEMENTS

6.38 The Ombudsman thanks EPD, FEHD, LandsD, DSD and 1823 for their full cooperation in the course of this investigation. We are also grateful for the information and views submitted by members of the public who are concerned about this subject.

Office of The Ombudsman
Ref: DI/459
August 2023

We will post the case summary of selected investigation reports on social media from time to time. Follow us on Facebook and Instagram to get the latest updates.

Facebook.com/Ombudsman.HK

Instagram.com/Ombudsman_HK

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Appendix

Appendix I

PART II: INSTALLATION OF DRAINAGE WORKS

Items Checklist

1) Drainage system : 0.23 metre (9") paved surface channel discharged to stream/ nullah/sea/soakage pit/field/fish pond etc.*
2) Latrine accommodation : (provided/not provided*)
3) Septic tank : (provided/not provided*)
4) Soakage pit : (provided/not provided*)
5) Adequate manholes and vent pipe for septic tank and soakage pit : (provided/not provided*)
6) The pipes for the discharge of soil and waste water are connected to septic tank : (connected/not connected*)
7) Kitchen accommodation : kitchen *Note 3* (provided/not provided*)
8) All internal wall surfaces of kitchen, bathroom and latrine accommodation imperviously tiled/surfaced with smooth impervious materials to a height of not less than 1.22 metres (4'). (provided/not provided*)
9) Flushing water supply :
   i) mains fresh water/stream/well/salt water*
   ii) consent from the Water Authority for use of mains water for flushing purposes, copy at F(   )   (yes/no*)
   iii) Others : ___________________________

Outstanding items : (please specify)

Note 3 Open kitchen design is acceptable. Installation of cooking stove and/or other kitchen appliances is **not required** for checking of provision of kitchen accommodation.

Inspection conducted by ___________________________ on ____________________
Inspection Report Prepared by on __________________ on ____________________
and checked by ___________________________________ on ____________________

* Delete as appropriate

Drainage and Health Requirements for
Village Type Houses
(for cases where drainage system is connected to public sewer or
standard septic tank and soakage pit system is adopted)

Under the N.T. Small House Policy every village type house shall be provided with soil fitment (i.e. water-closet fitment, trough water closet, urinal, slop sink, bidet or any similar fitment). There shall also be facilities for the proper disposal of soil (i.e. discharge from soil fitment) and waste (i.e. discharge from bath, lavatory basin, kitchen basin). In areas where there is public sewer provided for the carriage of foul water, soil and waste should be conducted to such public sewer (after being approved by the Building Authority). In areas where there is no such public sewer, private sewage disposal system should be constructed to dispose off soil and waste.

The sewage disposal system serving a single village type house shall be in the form of a septic tank and a soakage pit as specified in pages 2, 3, 4 and 7.

For sewage disposal system serving more than one village type house, installations other than septic tank and soakage pit may be permitted. Septic tank and soakage pit serving more than one village type house shall satisfy the requirements listed in pages 5 and 6. It should be noted that these are only minimal requirements. Grantees who decide to construct a system to serve more than one village type house will be required to submit the drainage plans to the District Lands Office for approval before the construction works begins.

The septic tank shall be maintained in proper working order at all times by the house owner/occupier and periodic desludging should be carried out when required. If any septic tank is found to have discharged wastewater to the communal surface water drainage system or streams etc., enforcement action will be taken by Environmental Protection Department under the Water Pollution Control Ordinance, Cap. 358.

Director of Environmental Protection confirmed that the adequacy of the septic tank design given in the Drainage and Health Requirements for Village Type Houses mainly rests with the uncertainty on the number of persons that will live in the house. If it does not exceed 8 persons the design can be considered satisfactory.

Grantees are advised that if the number of persons to occupy the Small House is likely to exceed this number (8) then a more sophisticated design possibly including a desludging chamber may be required.

If the Small House is being designed to be built as 3 separate units i.e. 1 flat per floor, then where practical, a separate drainage system should be provided for each unit. A larger combined system is not encouraged because of the subsequent management / maintenance problems.

In addition to the above requirements it is recommended that :-

(1) Kitchen accommodation shall be provided in the premises.

(2) All internal wall surfaces of kitchen, bathroom and latrine accommodation should be imperviously tiled or surfaced with smooth impervious material to a height of not less than 1.22 metres.

6.12.2018
(Previously 26.2.2009)

(3) Openings or windows which can be opened to the open air shall not be less than 1/10th of the floor area.

The sewage disposal system serving a single village type house should satisfy the following requirements :-

A. Septic Tank

1. Location

(a) the septic tank should be situated not less than 30 m from any spring, stream, well or beach.

2. Design and dimension

(a) the dimension should be 0.8 m (internal width) x 2.4 m (internal length) x 1.2 m (tank water level i.e. distance between the floor and the lowest point of the horizontal section of the outlet dip-pipe).

(b) the distance between the tank water level and the roof should not be less than 300 mm.

(c) the septic tank should be divided into two chambers. The inlet chamber should have a capacity twice that of the outlet chamber.

(d) the partition wall should extend from the floor to not less than 150 mm above tank water level (i.e. 1350 mm). The distance between the top of the partition wall and the roof should not be less than 25mm.

(e) there should be three holes, each of 100 mm diameter, on the partition wall. The centres of the three holes should be at the same level of 350 mm below tank water level and spaced at 225 mm intervals.

3. Inlet and Outlet

(a) the inlet and the outlet should be in the form of T-shaped dip-pipes.

(b) the internal diameter of the dip-pipes should not be less than 100 mm.

(c) Both the inlet and the outlet should penetrate 450 mm below the tank water level and 150 mm above the tank water level. The inlet should be at a level not less than 50 mm above the outlet.

(d) The centre-line of inlet pipe should not be more than 150 mm from the inlet wall, the centre-line of the outlet pipe should not be more than 150 mm from the outlet wall.

4. Ventilation Pipe

   (a) The first chamber should be provided with a ventilation pipe of not less than 50 mm diameter.

5. Manhole

   (a) manhole with cover should be provided for each chamber directly over the dip-pipe.

   (b) the manhole should be circular with a diameter not less than 450 mm.

   (c) the manhole cover should be made of cast iron.

6. Material

   (a) the sides of the septic tank should be constructed of

      (1) brickwork in cement mortar not less than 215 mm thick or

      (2) concrete not less than 125 mm thick.

   (b) the floor of the septic tank should be constructed of concrete not less than 150 mm thick.

   (c) all the wall and the floor of the septic tank should be so constructed and finished as to be impervious.

B. Soakage Pit

1. Location

   (a) the soakage pit should be situated not less than 30 m from any spring, stream, well or beach.

2. Design and dimension

   (a) the soakage pit should be in the form of a cylindrical or cuboidal cavity.

   (b) the depth below the level of inlet pipe should not be less than 1.8 m. The internal perimeter should not be less than 2.8 m.

   (c) the wall below the level of the inlet and the floor should be bored with 50 mm diameter holes. The centre to centre distance between the holes should be 300 mm.

   (d) the soakage pit should be completely surrounded, below the level of inlet pipe by a 150 mm layer of app. 75 mm diameter stones.

4/ ...

3. Manhole

(a) a manhole with cover should be provided.

(b) the manhole should be circular with a diameter not less than 450 mm

(c) the manhole cover should be made of cast iron.

4. Material

(a) the sides of the soakage pit should be construced of

(1) brickwork in cement mortar not less than 215 mm thick or

(2) concrete not less than 125 mm thick.

(b) the floor of the soakage pit should be constructed of concrete not less than 150 mm thick.

C. Connecting Pipes

(a) All the soil and waste should be conducted by pipes of not less than 100 mm diameter to the septic tank.

(b) The effluent of the septic tank should be conducted by pipes of not less than 100 mm diameter to the soakage pit.

(c) Surface water should not be allowed to enter the septic tank nor soakage pit.

5/ ...

The following are the requirements that a septic tank and a soakage pit serving more than one village type house should satisfy :-

A. Septic Tank

1. Location

(a) the septic tank should be situated not less than 30 m from any spring, stream, well or beach.

(b) there should be road access for desludging vehicle to within 30m from the septic tank.

2. Design and dimension

(a) it should have a fluid capacity not less than 2.3 m^3 and not more than 41 m^3.

(b) the fluid capacity should not be less than 0.18 Nm^3 where N is the number of persons using or likely to use the soil fitment installed in the village type houses for which the septic tank is provided.

(c) it should have a depth of at least 1.2 m but not more than 1.8 m from the invert of the inlet to the floor of the tank.

(d) the distance between the tank water level and the roof should not be less than 300 mm.

(e) it should have a length not less than three times but not more than 4 times the width.

3. Ventilation Pipe

(a) a ventilation pipe of not less than 50 mm diameter should be provided.

4. Manhole

(a) manhole with cover should be provided for each chamber directly over the dip-pipe.

(b) the manhole should have a diameter not less than 450 mm.

B. Soakage Pit

1. Location

(a) the soakage pit should be situated not less than 30 m from any spring, stream, well or beach.

6/ ...

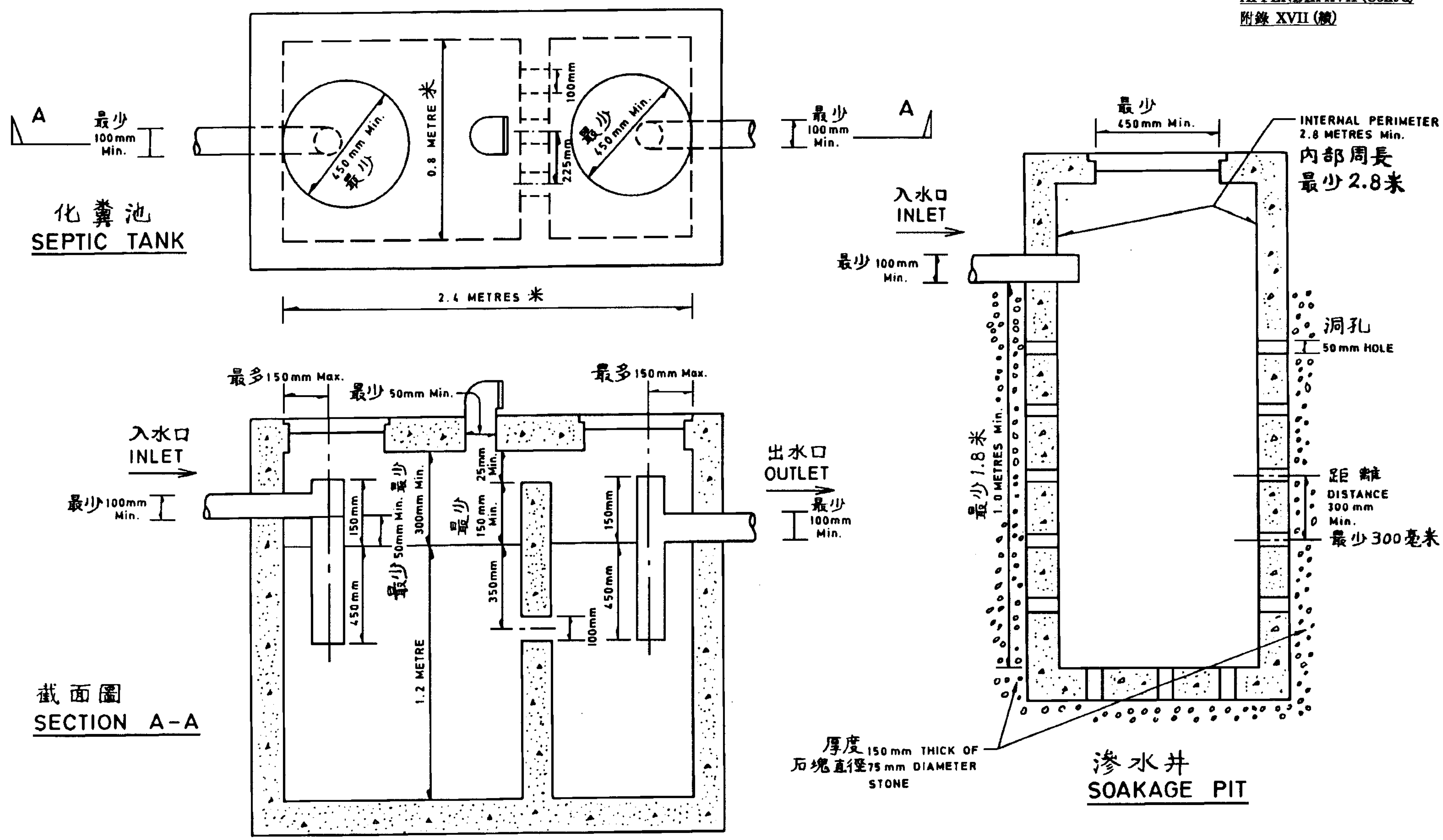
2. Design

   (a) the size should be based on the result of percolation test at the site and the number of persons to be served.

3. Manhole

   (a) a manhole with cover should be provided.

   (b) the manhole should have a diameter not less than 450 mm.



單獨一間的鄉村式屋宇的化糞池及滲水井
SEPTIC TANK AND SOAKAGE PIT FOR A SINGLE VILLAGE TYPE HOUSE

NOTE : This design is suitable only if the total number of people to occupy the house does not exceed 8
註：此設計只適合入住總人數不超過8名的屋宇.